

2012 Water Levels

Contents

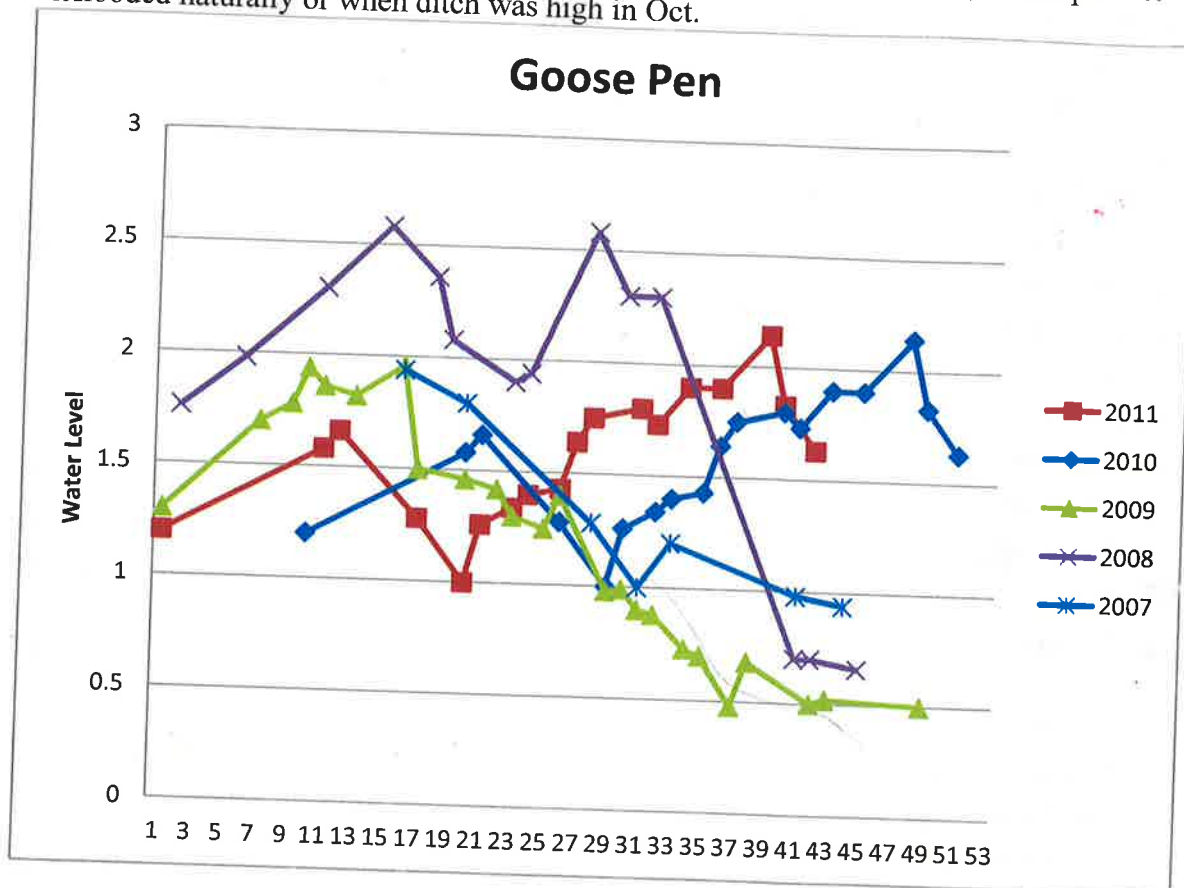
<u>Unit: Goose Pen</u>	2
<u>Unit: Woodies Roost East</u>	4
<u>Unit: Woodies Roost West</u>	6
<u>Unit: Show Pool</u>	8
<u>Unit: Pool 1</u>	10
<u>Unit: Entrance Pool</u>	12
<u>Unit: MSU 8B</u>	14
<u>Unit: Pool 2C</u>	16
<u>Unit: Pool 2B</u>	18
<u>Unit: Pool 2A</u>	20
<u>Unit: MSU 8A</u>	22
<u>Unit: MSU LL</u>	24
<u>Unit: Mini Marsh</u>	26
<u>Unit: Hunt Unit 93</u>	28
<u>Unit: MSU 7</u>	30
<u>Unit: MSU 6</u>	32
<u>Unit: Hunt Unit 6</u>	34
<u>Unit: MS 2 North</u>	36
<u>Unit: MS 2 South</u>	38
<u>Unit: MSU 3</u>	40
<u>Unit: MSU 5</u>	42
<u>Unit: MSU 4</u>	44
<u>Unit: Pool 3</u>	46
<u>Unit: Metzger Marsh</u>	48
<u>Unit: Pool 9 East</u>	50
<u>Unit: Pool 9 borrow area</u>	52
<u>Unit: Darby Pump Operations & Pump Ditch settings</u>	54
<u>Unit: Darby Pool 1</u>	55
<u>Unit: Darby Pool 4</u>	57
<u>Unit: Darby Pool 3</u>	59
<u>Unit: Darby Pool 2</u>	61
<u>Unit: Cedar Point Pool 1</u>	63
<u>Unit: Cedar Point Pool 2</u>	65
<u>Unit: Cedar Point Pheasant Farm</u>	67
<u>Unit: Schneider</u>	69
<u>Unit: Blausey South East unit</u>	70
<u>Unit: Blausey North East unit</u>	71
<u>Navarre</u>	72
<u>Other Satellite Properties</u>	73

Unit: Goose Pen

Acres: 57

2011 Activity: Unit remained lower than normal in the early year but was brought up in August and September through portable pumping and heavy rainfall, trying to overtop cottonwoods.

Draw Down Years: 2010- drawn down in April unable to reflood until 2011. 2009 - low water allowed evapotranspiration to expose mudflats on high ground areas in September (0.48); 2006 – March through September draw down. 50% mudflats exposed April 10. Reflooded naturally or when ditch was high in Oct.



Unit Goal: Provide foraging and resting habitat for migratory birds.

Objectives: Control exotic flowering rush and purple loosestrife. Encourage more desirable vegetation. Put in a rotation for fall shorebird habitat.

Strategies: Cottonwood becoming established, needs controlled by spray, disking, or flooding.

Management Strategy Constraints: The east dike is in bad shape. There is a French drain under the road that goes to the check station that allows the ditch next to Magee's entrance road and shop to drain. When the unit is too high, water backs up and threatens the Magee shop/garage. During high spring lake levels in conjunction with lots of rain the culvert under our entrance road is too small and water backs up in the drainage ditch and floods Magee's entrance road and prevents Goosepen from draining. 2.0 is full pool & will begin flooding state.

Repairs Needed: II. East dike in bad shape, and portions of west dike.

Unit: **Goose Pen:** 2.0 is full pool (1' free board on east dike – dike in bad shape)

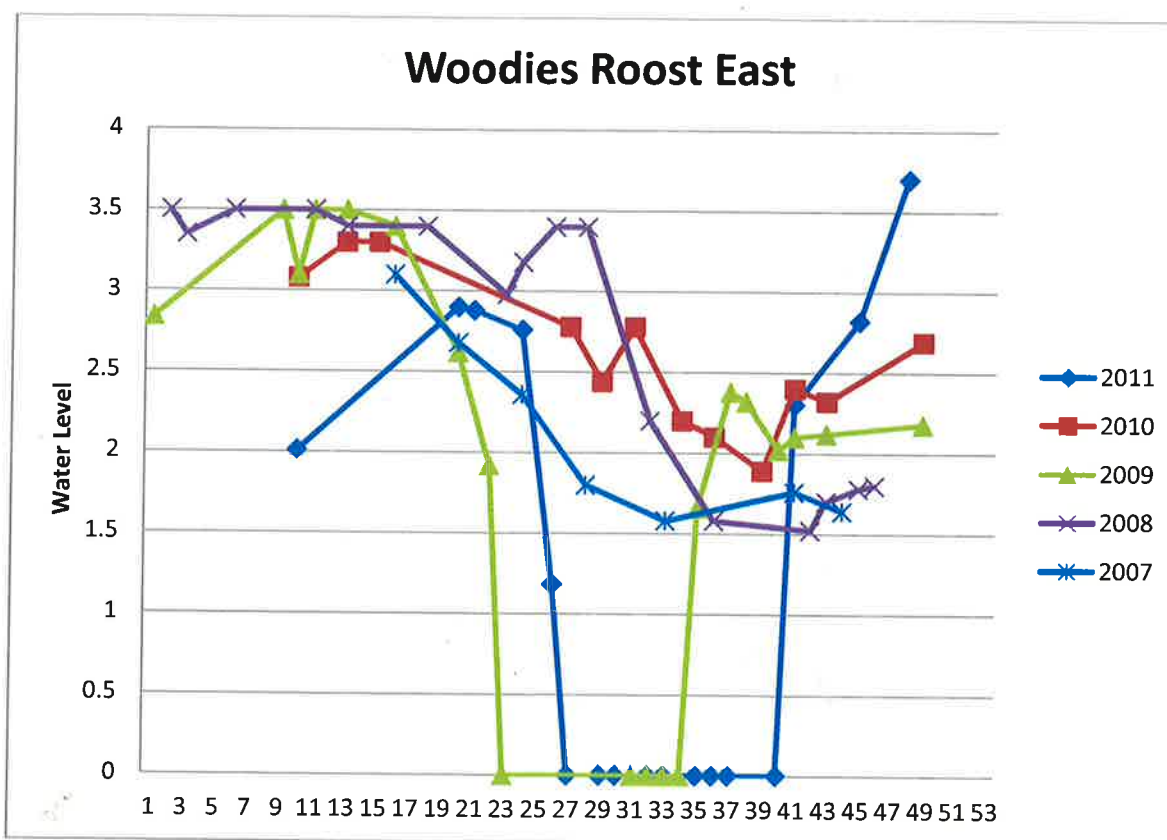
Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
Old	new			old	new	
			Jan.			
			Feb.			
2.0			Mar.			
		12	19	1.90		opened to let water out
		12	21	1.80		Closed
		4	Apr 4	1.7		Draw down for May shorebird habitat – portable pump
		15	12	1.6		
		17	27	1.5		
0.5		18	May 4	1.5		Should clean and remove veg.
		20	16	1.52		"
		21	23	1.26		
		22	29	1.20		
		23	June 5	1.10		
		24	11	0.80		
		25	18	0.86		
		26	25	0.80		
		27	July 2	1.64		
		29	17	0.00		
		30	24	0.02		unit appears dry, water near gauge
		31	31	dry		
		32	Aug. 7	dry		
		6	Sept. 1	0.00		Reflood
		39	27	Dry		water in NE pool only
			Oct.			
			Nov.			
			Dec. 7	DRY		
			18	DRY		

Unit: Woodies Roost East

Acres:

2011 Activity: In June ditch plug from route 2 failed resulting in flooding woodies. 600 lbs of aquablock was used to block water flow. Water was drawn down from July till October for dike repair project on common dike. Water was pumped in though the states ditch in early October for hunts. Water is too low for waterfowl hunts at 2.1 muck was in front of blind. Desired water level has changed from 1.7-1.9 to 2.4 due to movement of the staff gauge.

Draw Down Years: 2011 – due to dike construction. 2009 – drawn down mid April, completed by May 30th, flood mid Aug great millet germination; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions and watch invasives.

Strategies: Maintain full pool for invasives prevention and evaluate for flowering rush establishment.

Potential Problems: Beaver, fixed leaking gate on the north side in 2009, coordinating management with Magee's activities may require timing adjustments, This unit has a watershed to the south & will gain more water during rain events.

Repairs Needed: May install water control structure and culvert at ditch plug.

Unit: Woodies Roost East -

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
Old	new			old	new	
			Jan. 30			Underwater
			Feb.			
		12	Mar. 22	23.6		Flow around WR West ~6" deep, ~5" under flowing out aqueduct
2.7-3.0						
		14	Apr. 4			Underwater
		17	27			"
2.7-3.0						
		18	May 4			Underwater
		20	16			"
		21	23	3.3		should be cleaned
		22	29	2.7		
		23	June 5	3.12		
		24	11	2.80		
		25	18	2.86		
		26	25	2.72		
		27	July 2	2.52		
		29	17	1.07 2.03		
		30	24	1.90		
		31	31	1.76		
		32	Aug. 7	1.07 1.60		
		33	14	1.62		
		34	23	1.42		50+ Mallards
		36	Sept. 6	1.40		
		37	13	1.90		14-20
2.40		42	Oct. 14	2.34		
		43	23	2.30		
		44	30	2.30	72.30	New post
			Nov.			
			Dec. 7	2.8	72.38	
			14	2.8	72.48	

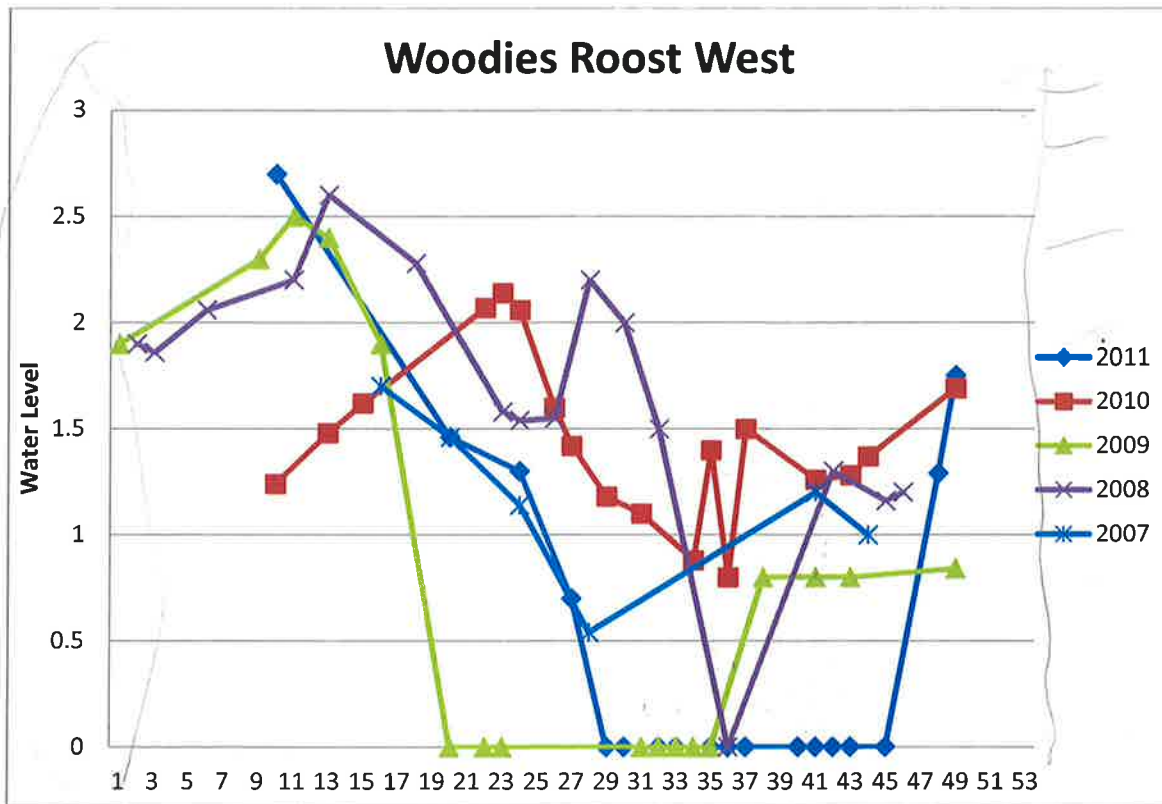
Post
Q'

Unit: Woodies Roost West

Acres:

2011 Activity: Water was drawn down from July till November for dike repair project. Opened to the east side in November.

Draw Down Years: **2011** – construction of dikes. 2009 – drawn down mid April, completed by May 30th, flood mid Aug; 2006 – drawn down mid march, completed mid April. Reflooded in Aug.



Unit Goals: Provide foraging habitat and cover for wading birds and waterfowl.

Objectives: Manage for hemi marsh conditions

Strategies: Determine new full pool and maintain maximum level with pumping to open up cattails. Evaluate for new hunt blind locations. Add one new blind?

Potential Problems: Beaver and construction

Based on previous years, full pool is 2.6, however the unit does not appear to be able to maintain this high of a level. There is likely a leak somewhere. Staff plate meets bottom of unit at 0.8.

Repairs Needed:

- I. Screw gate between woodies west and south unit with blinds 141 & 142. Evaluate management of these units for continued waterfowl hunts.
- II. Reslope south dike + rock, along borrow area.
- III. WCS on N side needs repair, culvert rusting out and leaking.

Unit: **Woodies Roost West** – Based on previous years, full pool is 2.6. Bottom of unit at .8

Desired water level		wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	2.5		
			Feb.			
		12	Mar. 22	2.68		8-14" water. west edge
2.3-2.6						
		14	Apr. 4	2.4		
2.3-2.6		17	27	2.4		
		18	May 4	2.4		
		20	16	2.36		
		21	23	2.24		
		22	29	2.00		
		23	June 5	2.07		
		24	11	1.50		
		25	18	1.83		
		26	25	1.76		
		27	July 2	1.50		
		29	17	2.03	1.07	
		30	24	—		dry, water in ditch
		32	Aug. 7	—		" "
		36	Sept. 4	0		
		39	25	~.08		~.2 below gauge
		42	Oct. 14	1.06		
		43	23	1.02		
1.2		44	30	1.06	72.39	New post (125 MAIL/WOODN)
			Nov.			
			Dec. 7		72.32	
			18		72.39	

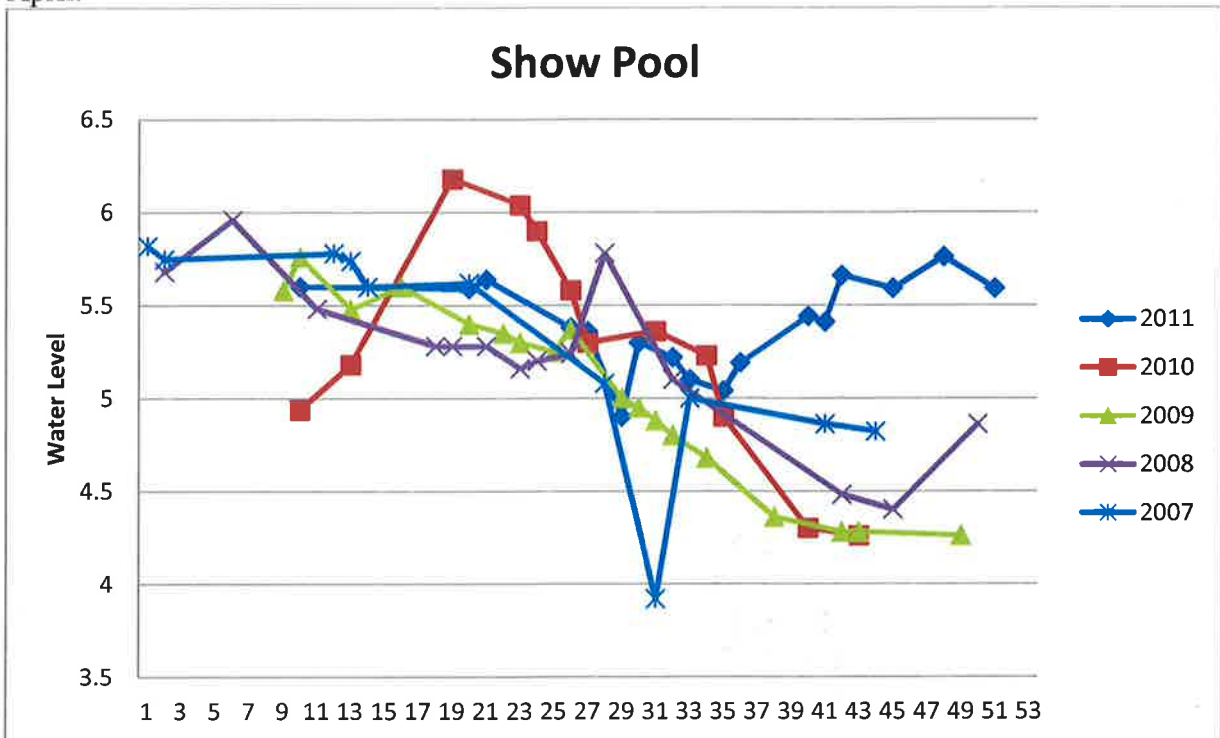
8' post

Unit: Show Pool

Acres: 41

2011 Activity: Water remained at a constant level most of the year but structure maybe leaking some. In January 2007, top board was replaced to maintain lower water levels to prevent high water in woods east of shop and to prevent damage to south and east dikes. Need to check structure to see if it is functioning.

Draw Down Years: 2009-Evapotranspiration resulted in water only existing in borrow areas in midseptember; 2005 – similar conditions as in 2009; 2004- agridrain installed in April.



Unit Goal: Because of the location of this pool to the office, it has been designated as a “show” pool with the intent that it can provide viewing of waterfowl including other wildlife and be a model wetland. This unit will be managed as a permanent wetland with deeper water to over winter fish and provide public catch and release fishing opportunities. Reevaluate in 2010.

Objectives: Increase diversity of emergent marsh vegetation and provide deep water for fish habitat.

Strategies: Monitor dikes, woods behind shop, and water depth on higher ground. Treat invasives. Phrag patches need sprayed in unit.

Management Strategy Constraints: East dike and south dike weakest/lowest of unit. Max water level is 5.48. Ideally, we’d have more water in showpool. The problem is low lake levels and lack of a water source. Future plans may need to think about dredging NS radar ditch or consider managing for other habitat types (ie – scrub/shrub)

Repairs Needed:

II. East dike shared with goosepen is getting high muskrat damage

III. South dike likely permeable when water is high, consider future management before repairing

Unit: **Show Pool** - Agridrain 15 3/4" wide. Max water level is 5.60-5.48

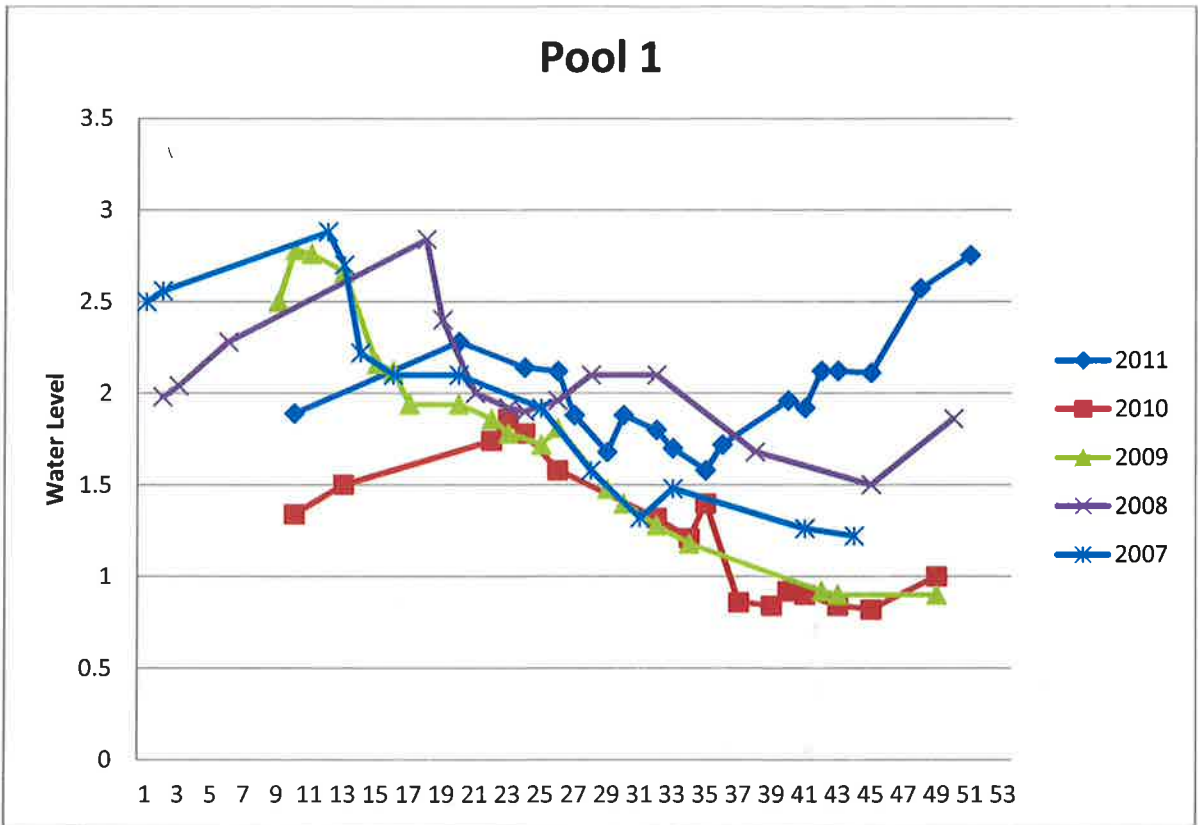
Desired water level		Wk #	201 1 2 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	5.6		
			Feb.			
		10	Mar. 8	5.59		
		12	22	5.56		Flow out slowly
>5.5						
		14	Apr. 5	5.45		Shoot water levels btwn goosepen & showpool – look for possible connection
		15	12	5.46		
		17	27	5.3		
5.48						
		18	May 4	5.3		
		20	16	5.30		
		21	23	5.26		needs clearing
		22	29	5.22		
		23	June 5	5.14		
		24	11	5.00		Perhaps switch top board with a bigger board?
		25	17	4.93		
		26	25	4.86		
		27	July 2	4.72		
		29	17	4.40		
		30	24	4.32		
		31	31	4.20		
		32	Aug. 7	4.06		
		33	14	4.10		
		34	23	3.98		
		36	Sept. 4	3.97		
		38	27	3.96		Dry except pool + borrow
		42	Oct. 14	3.86		
		43	23	3.86		
		44	30	3.84	6.9.6	
			Nov.			
			Dec.			
				6.8.78	68.78	
					68.8	

Unit: Pool 1

Acres: 343

2011 Activity: Water was at good level most of the year but record level rainfalls made this unit deeper than normal in November and December. At 2.5 the water level in front of hunt blind 1 is 3 ½ feet deep.

Draw Down Years: no record



Unit Goal: Provide habitat for nesting common terns, foraging herons, mussel beds, rails, and fish. As well as provide a rest area for waterfowl.

Objectives: The topography of this unit allows for a variety of water level depths. To provide habitat for nesting common terns, fish and mussels, maintain deep (3-4ft) open water areas. Provide emergent and submergent wetlands for wading birds, waterfowl and invertebrates. The higher elevation areas along the south and north parts of the unit will provide flooded grass and sedge areas for rails.

Strategies: Leave high waters on this spring, no active management.

Management Strategy Constraints: Screw gate on west side not able to close – it keeps coming off of frame. Gate to lake is closed.

Repairs Needed:

II. Water control structure on west side - screw gate comes off braces when closed. Currently open, but creek gate closed.

Unit: **Pool 1** – Management may change based on Crane Creek structure

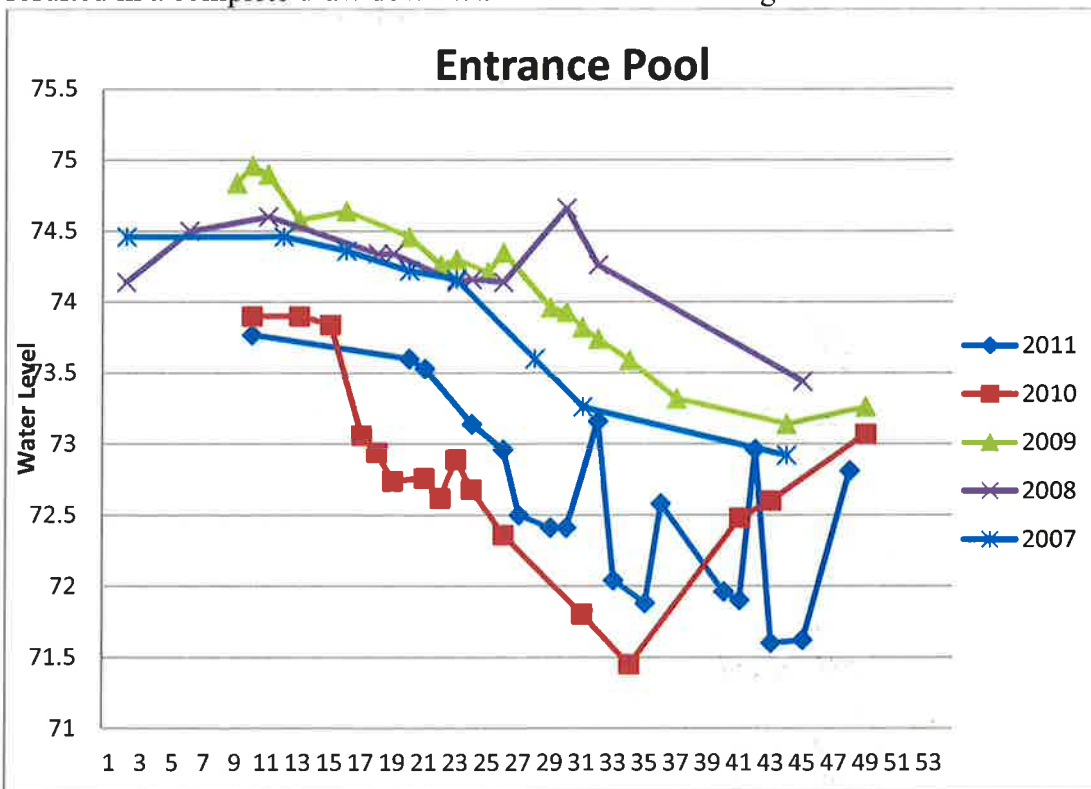
Desired water level		wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	3.0		
			Feb.			
		10	Mar. 8	3.1		
		12	21	3.24		
2.3-2.4						Water o/k West side (larger rocks) 0-12" rock (D area) rest of unit. W side, 1 1/2 water over rocks
		14	Apr. 5	3.2		
		15	12	3.10		
		17	27	3.0		
		18	May 4	2.95		
		20	16	2.96		
		21	23	2.91		
		22	29	2.89		
2.0		23	June 5	2.79		
		24	11	2.70		
		25	18	2.60		
		26	25	2.52		
		27	July 2	2.40		
		29	17	2.15		
		30	24	2.01		
		31	31	1.92		
		32	Aug. 7	1.86		
		33	14	1.92		
		34	23	1.80		
		36	Sept. 4	1.77		
		39	27	1.78		
		42	Oct. 14	1.70		
1.1-1.2		43	23	1.76		
		44	30	71.46		New plate - no record, est 71.46 \approx 1.76
			Nov.			
			Dec. 7	71.48		
			18	71.5		

Unit: Entrance Pool

Acres: 150

2011 Activity: This unit fluctuated a lot by the end of the year because of a board that was pulled sometime in May or June without our knowledge. Rainfall and a leaking structure made this unit fluctuate highly.

Draw Down Years: **2010** – D.D. in June tried reflooding in October but there was not enough water to free flow needed to pump with a Thompson. **2009** – evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; **2007** – evapotranspiration resulted in a draw down with water only remaining in channel along Entrance Rd; **2005** – Construction (new stoplog structure) and evapotranspiration resulted in a complete draw down with mudflats in mid-august.



Note: 1.0 = water only in channel.

Unit Goal: Provide a diversity of marsh type habitats, ranging from cattail stands to open water. Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. Control exotic invasive species.

Objectives: Provide shallow to deep emergent marsh. Maintain higher water levels to combat purple loosestrife.

Strategies: What is full pool? TBD

Management Strategy Constraints: Water can only be added by using a portable pump.

Repairs Needed: Check Boards make sure they are functioning.

Unit: Entrance Pool

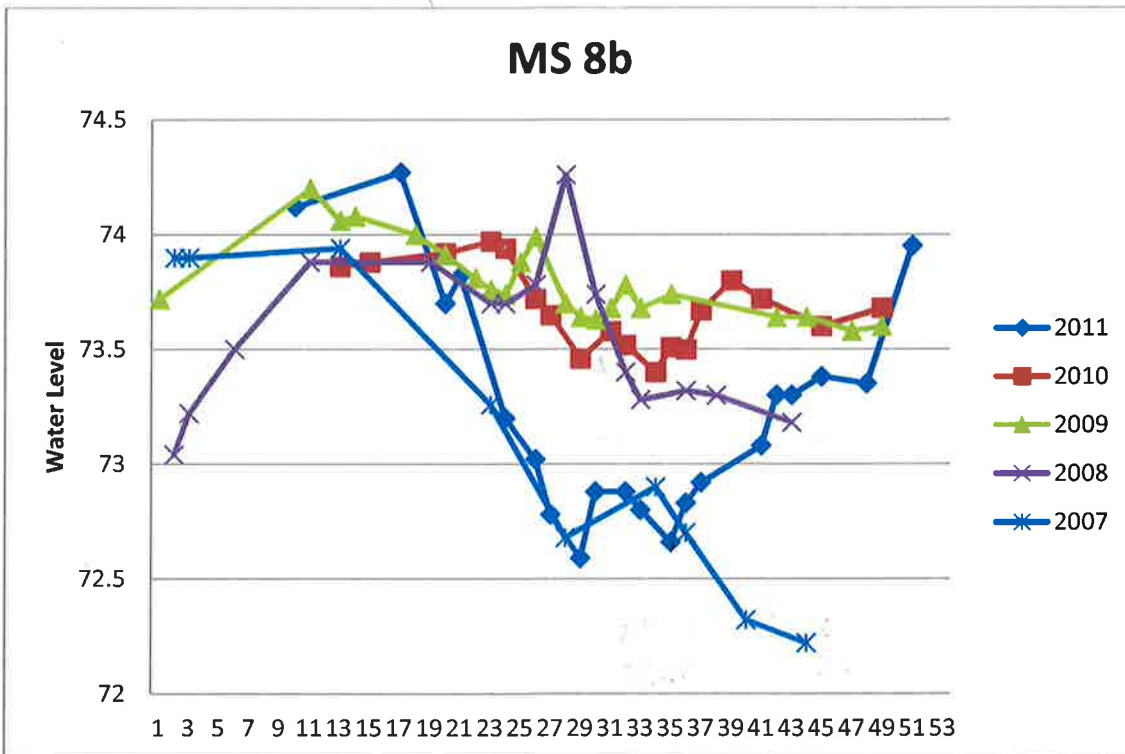
Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		10	Mar. 8		73.6	
		12	12	1.68	73.62	NOSH, TRUS, BOTE, CAGO water flow out
<1.7						
		15	Apr. 12		73.42	Draw down for May mudflats
		17	27		73.27	
1.0?		18	May 4		73.25	
		20	16		73.22	
		21	23		73.08	needs cleaning
		22	29		72.98	
		23	June 5		72.86	
		24	11		72.66	
		25	18		72.46	
		26	25		72.32	
		27	July 2		71.94	
		28	12		71.35	
		29	17		71.25	
		30	24		-	dry, unit dry
		32	Aug. 7		-	
		36	Sept. 4		77.0	Reflood 72?
		39	27		72.74	
		42	Oct. 14		73.20	
1.28		43	23		72.96	
		44	30		72.98	100 MAIL, 75 CAGO
		4	Nov.			
			Dec. 7		72.86	
			18		72.50	

Unit: MSU 8B.

Acres: 100

2011 Activity: Water was at desired levels from March to June but then structure was left open without authorization until mid-July. Thompson pump was turned on in July to let water out of woods. Rainfall filled the unit the rest of the way at the end of the year.

Draw Down Years: 2005 - drawn down briefly in June for construction and reflooding began by end of month; 2004 - drawn down March and reflooded in late August; 2003?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage against invasives and allow for more open areas in the marsh.

Strategies: Provide spring shorebird habitat. Time peak habitat availability for May 10th. Maintain high water levels in the unit throughout the growing season. This will likely require periodic pumping and active management.

Management Strategy Constraints: Water levels may need to be manipulated to install a pump structure from the Visitor Center ditches into 8b as well as add an agridrain to the south east corner of the unit. Full pool 3.40-3.46 – May need to pump to maintain high water.

Repairs Needed: Pump (motor) was replaced in September 2010.

Unit: **MS 8b** - Full pool 3.40-3.46 - Readings can be taken from the SE structure measuring from water's surface to top of brace. Tape measure reading of 21 1/2" = 3.48

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	3.9	74.20	
			Feb.			
		10	Mar. 8	4.0	74.28	
		12	19		74.38	opened 4" to let water out - east end
			20		74.30	still open
3.4/21.5"			22	3.94	74.12	still open, at Top of Agdrain - not flowing 23 74.04
		14	Apr. 5		73.60	
		15	13		73.43	opened 2 inches
		16	19		73.20	
		17	24		73.08	27 - 73.0
		18	May 4		72.86	8 th 72.96, opened 4" at 12pm 9 th 72.88, opened 7.5" 12 th
						10 th 72.80 at 3:30pm - left open
		19	11 th		72.74	2pm; May 12 6pm closed WLS 72.70
		20	15		72.62	
		23	June 3		72.49	
3.4		24	11		72.26	
		25	18		72.09	
		26	25		72.00	
		27	July 2	71.82	71.52	
		28	12		71.16	
		29	17		70.45	7/23 pump on
		30	24		70.22	7/31 72.08
3.4		32	Aug. 7		72.39	Dry
		33	14		72.72	15 72.75 - pump off
		34	23		72.60	
		35	29		72.68	Pump On - 2 days
		36	Sept. 4		72.66	
		37	12		72.64	
3.4		38	18		72.72	Pumps Days only, IIII - leaks broke through, pumps structure, close, 8b gate when pump off
		39	27	2.52	72.80	
		42	Oct. 4		72.76	
3.4		43	23		72.76	
		44	29		72.72	Pump on @ 11:00 am. Gate open @ 3:00 pm
					72.78	
			Nov. 1	72.86	72.86	Pump off at 11:00 am.
			Dec. 7		72.24	
			18		73.0	

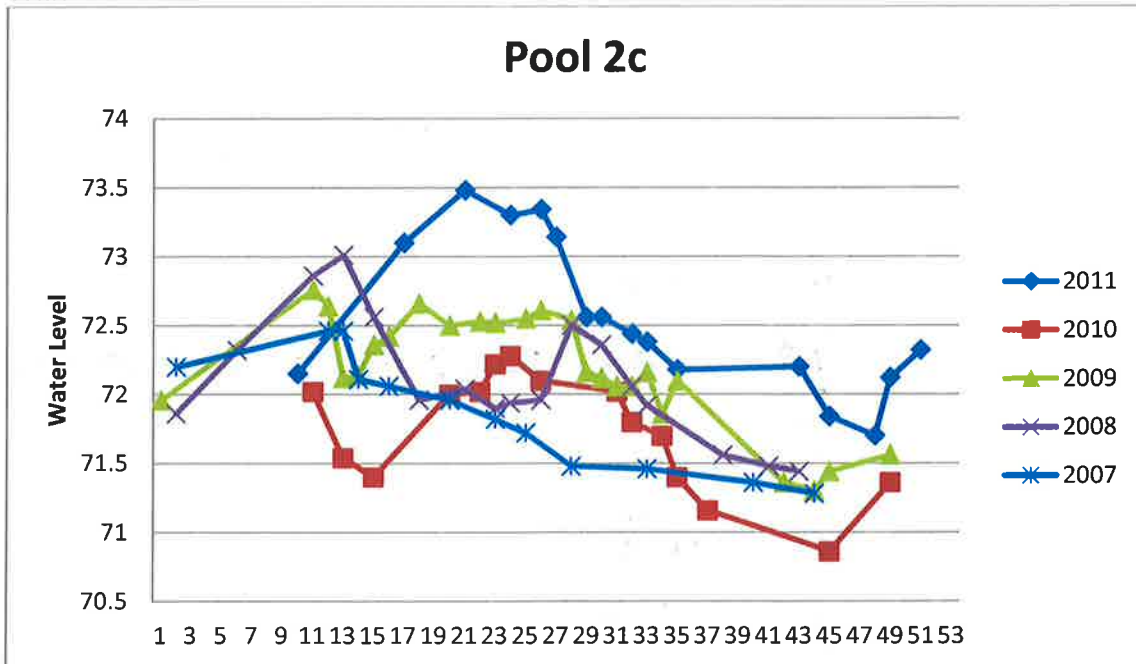
Unit: Pool 2C

Acres: 82

2011 Activity: This unit was opened to the Lake in the spring and late fall it fluctuated though out the year with lake levels. It was closed to the lake for trapping in late November. No pumping was needed.

Draw Down Years: 2005 – Pumped down mid-March through end of May with 60% mudflats achieved, remainder 6 in or less. Unable to pump down further.

Evapotranspiration led to most of unit drawn down by July. Unit gained water in August and reached May levels again. Unit was reflooded in September. High levels of P.L establishment.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

Objectives: Manage for hemimars conditions.

Strategies: Open carp gates to lake after carp run and leave open until ice up.

Management Strategy Constraints: Water can only be added with a portable pump or high lake levels. High lake levels can also inhibit taking water off the unit and free flowing into the lake.

Repairs Needed:

Unit: **Pool 2c** - 2.0 on the gauge = 2 - 2 ½ feet of water across most of unit.

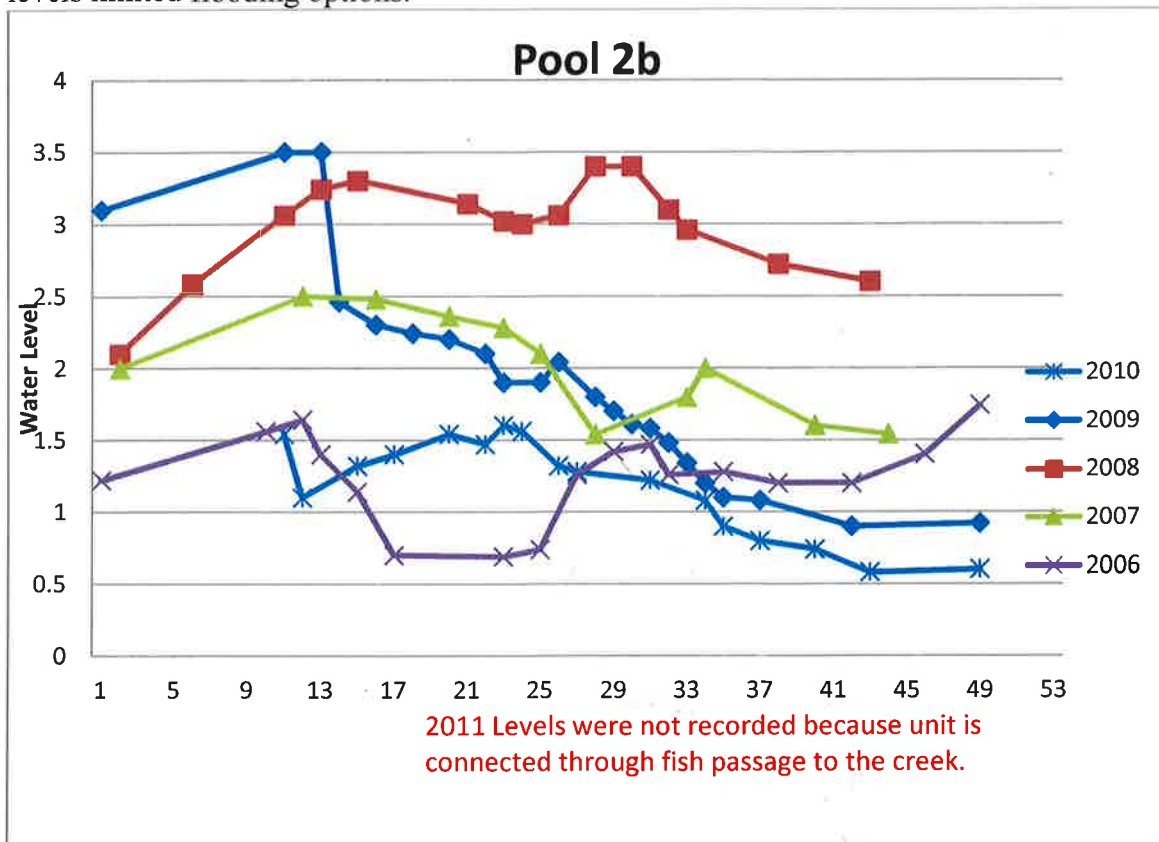
Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	72.69	72.7	
			Feb.			
		12	Mar 22	72.90	72.81	
						Leave open until minimum threshold of 1.7 is reached
2.0						
		14	Apr. 5		72.75	
		15	12		72.65	
		17	27		72.50	
		18	May 4		72.48	
		20	15		72.48	
		21	23		72.48	
		22	29		72.38	
>1.7		23	June 5		72.10	
		24	11		71.86	
		25	18		71.87	
		26	25		71.88	
		27	July 2		71.69	
		28	12		71.76	
		29	17		71.56	
		30	24		71.55	7/31 - 71.34
		32	Aug. 7		71.28	
		33	14	≈ 71.18		Below gauge
		34	23	≈ 71.00		"
			Sept. 4			Below gauge
		39	27	1.16	—	
			Oct. 14			Below Plate
1.4		43	23	70.68		NEW Plate cut to 69.00 - 1 ft. cut off
		44	30	71.12		in Sandhills
			Nov.			
			Dec. 7	~	70.84	
			18		70.88	

Unit: Pool 2B

Acres: 95

2011 Activity: There is no longer a staff gauge used at this unit. Look at long-term lake average to see how this unit fluctuated.

Draw Down Years: 2010- for construction of the fish passage. 2009- mid August draw down for fall shorebird migration, fair results achieved; 2006 – Unit was pumped down in mid-March and managed for mudflats & spring shorebird habitat through June. Unit was reflooded in July; 2005 – Pumped down early August for fall shorebird migration. 90% mudflats achieved by early September. Excellent shorebird response. Low lake levels limited flooding options.



Unit Goals: Attract a variety of waterfowl, shorebirds, water birds, and wetland animals to provide opportunities for wildlife viewing.

Objectives: Perennial smartweed is the dominant emergent vegetation in the unit, try to encourage more variety of vegetation. Provide areas of deep submergent wetlands for fish and invertebrates, as well as shallow emergent wetlands for wading birds and waterfowl.

Strategies: Leave open to Lake Erie. Set carp exclusion grates as needed based on water temperatures.

Management Strategy Constraints: Currently there is no independent water control for this unit, unless a portable pump is used. This can be costly and needs frequent monitoring/maintenance. Refuge budget and project priority will determine water management activities.

Unit: Pool 2b

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
						Draw down once temperatures allow
0.9		13	Apr.			
0.3			May			
0		21	June			
			25 July		3.04	
			24		2.26	
			Aug.			
		35	Sept. 14	1.25		Reflood
			Oct. 14	1.40		
1.0-1.5						
			Nov.			
			Dec. 3	1.98		

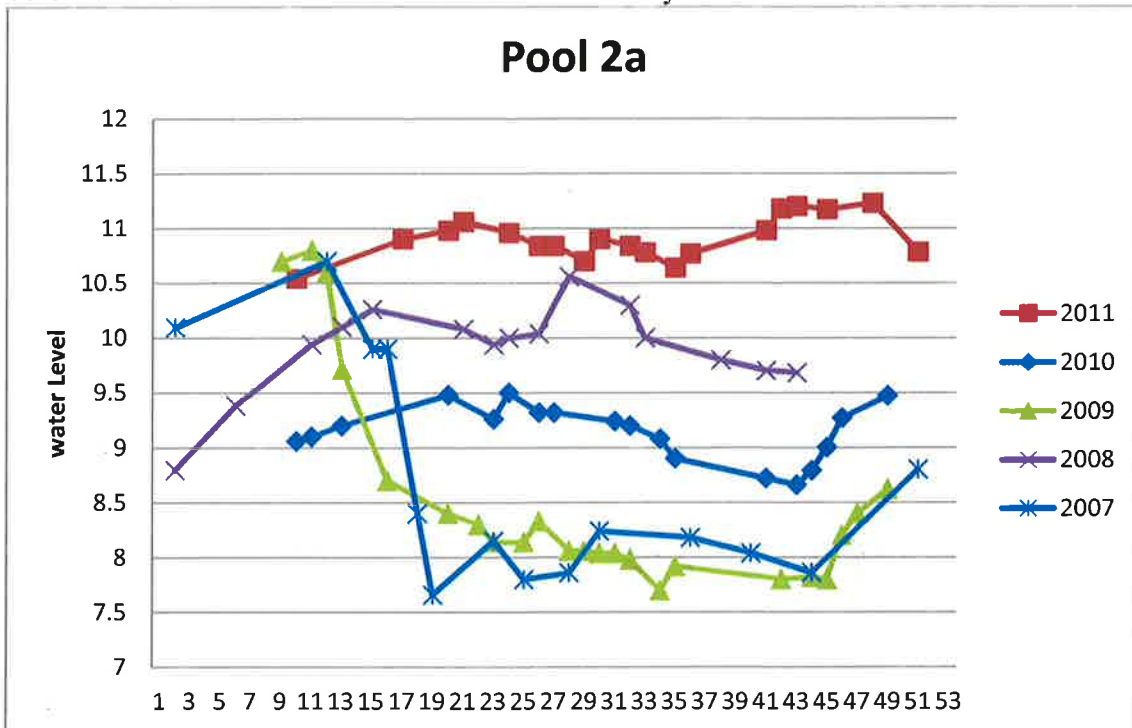
7.5' pool

Unit: Pool 2A

Acres: 65

2011 Activity: Water was significantly higher this year due to rainfall and high water levels. Tried pumping out in late November but tractor broke down. May need to pump out water in the spring.

Draw Down Years: 2009 – April through August managed for mudflats & shorebird use, reflooded in November – excellent shorebird use and good response of nutsedge & nodding smartweed around island; 2007 – Pumped down by May and reflooded in July. Missed April shorebird migration, but excellent knodding smartweed, sedge, & millet response and fall duck use. 2004 – drawn down started late March, but it was August before 90% of unit had mudflats. The unit naturally refilled over winter.



Unit Goals: Attract a variety of waterfowl, water birds, wetland animals and invertebrates to provide opportunities for wildlife viewing.

Objectives: Establish more perennial vegetation. Manage against invasives.

Strategies: Fish passage structure between pool 2a and 2b scheduled for installation in 2012. Remove excess high water by flow or pumps.

Management Strategy Constraints: It is difficult to remove high water. 8a must be drawn down at the same time, or a portable pump set up. Water must be added via 8a, or with a portable pump as well. Portable pumps take staff time to maintain and may conflict with other project priorities.

Repairs Needed:

III. To enhance water level management capabilities, a project to ditch MS 8A and install individual stop log structures to Pool 2A, 2B, and 2C is proposed.

- All gauge reading above 9 need 10 added to gauge reading

Unit: **Pool 2a** - Majority of mudflats exposed at 7.66

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30		11.10	
			Feb.			
		10	Mar. 8		11.24	
9.5-9.7		12	22		11.39	
		14	Apr. 5		11.35	Field check water level depths
		15	12		11.20	Started pumping?
		17	27			To dirty to read / still pumping out
9.2		18	May 4		3.68	
		20	15		8.80	
		22	29		8.64	
		23	June 5		8.66	Spray P.L.
		24	11		8.48	
		25	18		8.38	
		26	25		8.32	
		27	July 2		8.14	
		28	13		7.80	
		29	17		7.72	
		30	24		7.60	7/31 - 7.54 7.54
		32	Aug. 7	dry		Spray Phrag - water only at gauge
		33	14	7.34		
			Sept. 4	DRY		
			27	Dry		only isolated small pools
9.0-9.2			Oct. 14	DRY		
			Nov.			
			Dec. 7	7.14		small puddle at sign
			18	7.5		

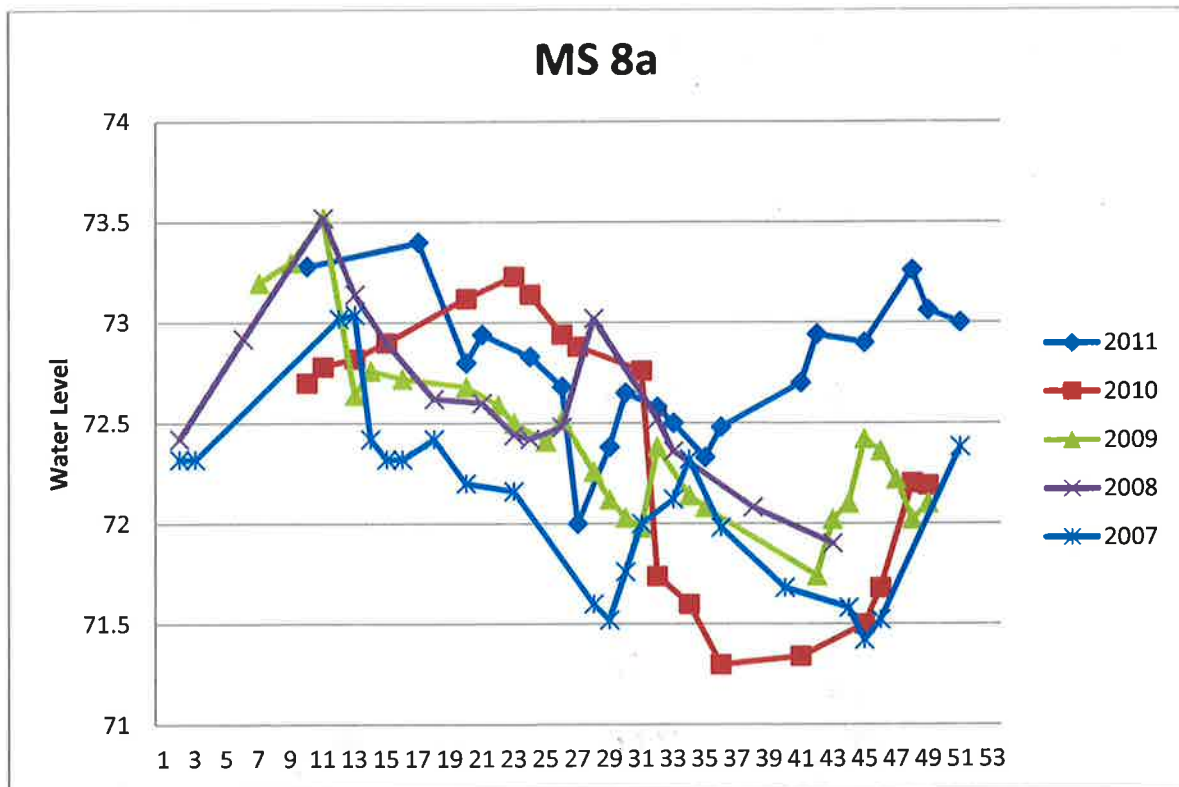
Unit: MSU 8A

Acres: 56

2011 Activity: Water was high at the beginning of the year in this unit but someone tampered with the structure and opened this unit to 2a which caused the water levels to drop. Pumping began in July to get water levels back to where they should be.

Draw Down Years: 2010 – Water taken out of unit in August reflooded in November.

2009 – evapotranspiration resulted in mudflats on east side in August. Periodic pumping and mudflats occurred through mid October; 2004 – drawn down in March. Parts of unit disked. Reflooded in mid-September; 2003 – planted buckwheat and flooded in fall?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Encourage marsh vegetation and invertebrates.

Strategies: Keep high water through summer, then evaluate for fall shorebirds.

Management Strategy Constraints:

Repairs Needed:

II. Catwalk needs raised 12"

Unit: MS 8a

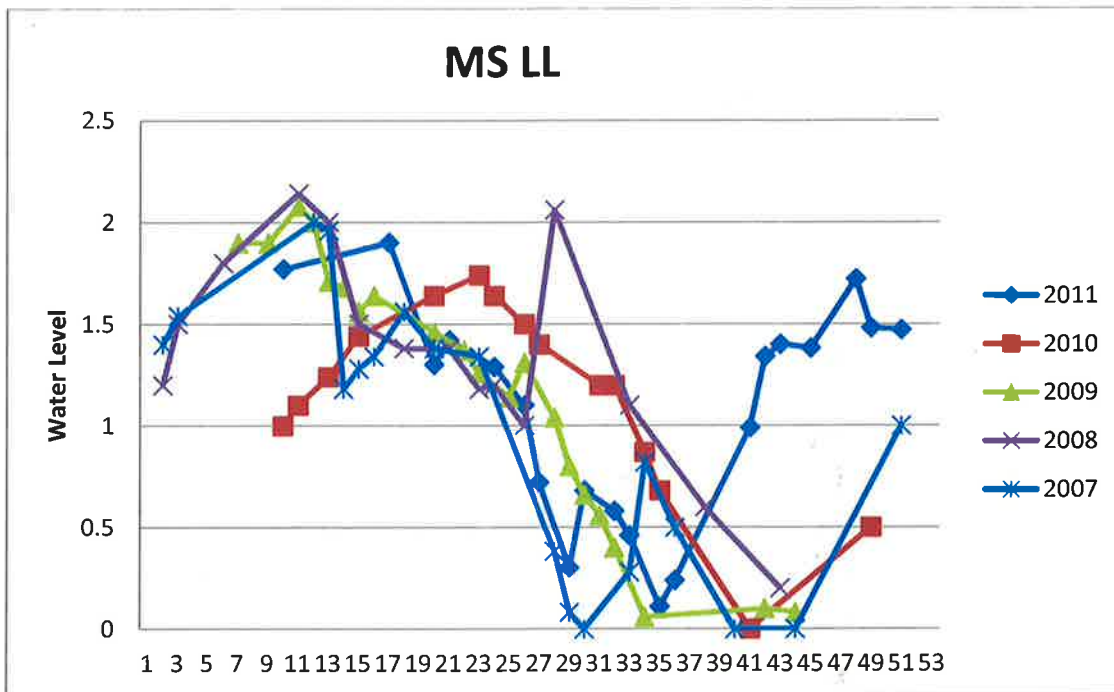
Desired water level			2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	2.2	73.30	
			Feb.			
		10	Mar. 8	2.29	73.34	
		12	22	2.30	73.36	
			Apr.			
		15	12		73.00	
		17	27		72.98	
1.7						
		18	May 4		72.87	
		20	16		72.86	
		21	23		72.80	
		22	29		72.74	
1.5		23	June 5		72.66	
		24	11		72.52	
		25	18		72.43	
		26	25		72.38	
		27	July 2		72.18	
		28	13		71.96	
		29	17		71.80	Pump On in at 11:00am
			18		71.78	1/5 July 24 72.20 72.30 7/30 3pm - pump off
		32	Aug. 7		72.71	7/31 8:30 pump on
			10		72.04	Pump off @ 1:15 pm 7/31 9:30 pump off
		33	14		72.74	
		34	23		72.70	
		36	Sept. 4		72.68	
		39	27	1.58	72.66	
0.8-1.0		42	Oct. 14		72.58	5 TRUS
		43	23		72.56	
		44	30		72.60	
			Nov.			
			Dec. 7		72.64	
			18		72.64	

Unit: MSU LL

Acres: 27

2011 Activity: Water levels fluctuated all year because of rain and pumping.

Draw Down Years: 2010- Starting in September water was below boards until December. 2009 – evapotranspiration resulted in late summer draw down (late July and August)



Unit Goal: Maintain unique refuge habitat and native plants. Provide foraging and nesting habitat for migratory birds.

Objectives: Maintain marsh conditions.

Strategies: Allow full pool in spring and evapotranspiration throughout the season. Maintain max level of 1.2-1.3 to prevent woods flooding.

Management Strategy Constraints: Unit floods easily from rains, resulting in dramatic water level changes. Approximately 1.3 unit floods north woods. Possibly broken outlet pipe to 8a pump box.

Repairs Needed:

I. Pipe to WCS is broken. Needs cut off & flushed out to allow for drainage.-current status unknown – works sometimes.

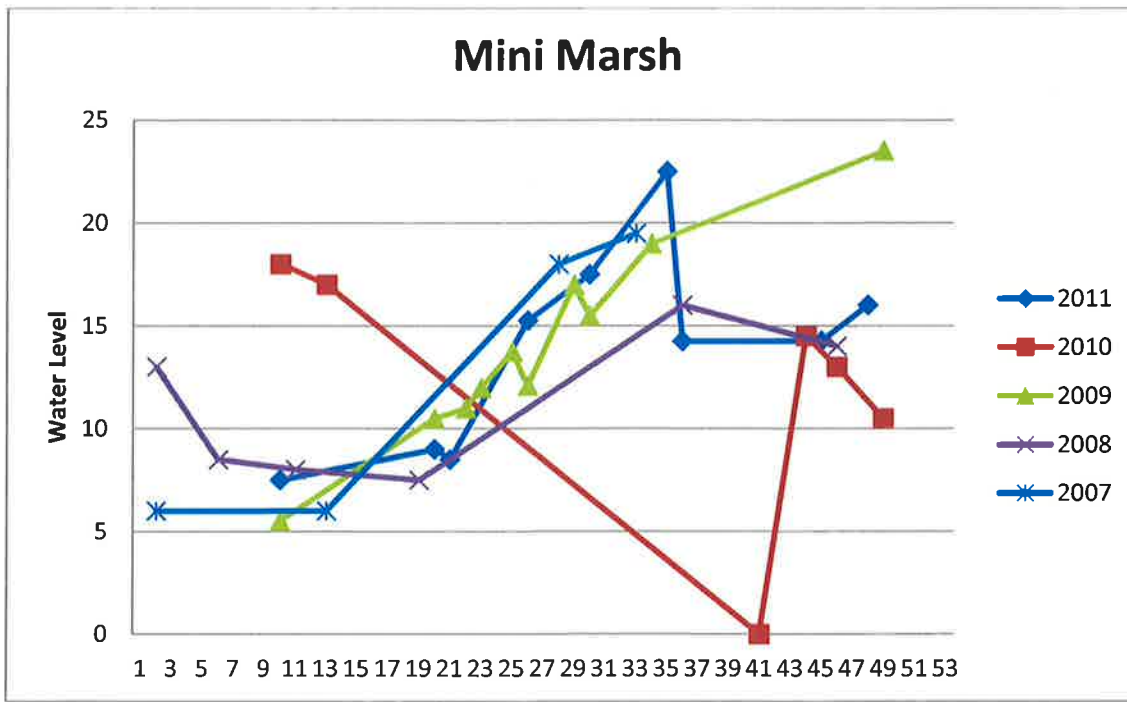
Unit: MS LL - Possibly, 1.30 is full pool. Higher water backs up into north woods.

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30	1.7		
			Feb.			
		10	Mar. 8	1.8		
		12	19	1.71		
1.3			22	1.34		opened to let water out stillspan, slow, 23 1.32
		14	Apr. 5	1.48		
		15	12	1.45		
1.3		16	19	1.3		
		17	27	1.25		
		18	May 4	1.28		
		20	15	1.20		
		21	23	1.24		
1.3		22	29	1.18		
		23	June 5	1.11		
		24	11	0.70		
		25	18	0.87		
		26	25	0.82		
		27	July 2	0.6		
		28	13	0.35		
		29	17	0.11		
			18	0.03		
		33	Aug. 14	1.08		July 24 - Dry water only in ditch leak from MS 8a
		34	23	1.08		
		36	Sept. 4	0.50	0	
		39	27	1.02		
		42	Oct. 14	1.04		
		43	23	1.06		
		44	30	1.02		
			Nov.			
			Dec. 7	.6		
				1.1		

Unit: Mini Marsh

Acres: 30

2011 Activity: Mini marsh is used as a holding tank to pump up blind 93 in the fall. During this time water levels fluctuate highly until pumping is finished.



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide summer/Fall shorebird habitat control cattails and reed canary grass.

Strategies: Drawdown early July until shorebird habitat is available, and cattail area is dry. Possibly burn, spray, mow, disk reed canary grass and cattails.

Management Strategy Constraints: If water in unit gets much higher than half way up the side of the discharge pipe, water leaks through splitter box to Crane Creek. Needs new flap gate.

Repairs Needed:

- I. Raise south dike – borrow from ditch and inside unit. This would allow for deeper water management capabilities and more diversity.
- II. Flap gate on pump outlet fallen off and needs replaced

Unit: **Mini Marsh** - Measure from waters surface to top of splitter box.

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		
old	new			old	new	
			Jan.			
			Feb.			
			Mar.			
8"						
		15	Apr. 11	11	1/2 of pipe	Opened 5 inches dropped 2 1/2 inches by end of day
			12	15		
		16	19	27		ONLY water in the channel
8"		17	27	27		Burned unit this week
		18	May 4	27		Dry - water in channel
		20	15	27		
		21	23			Dry - water in channel
		22	29			Dry
		23	June 5			"
		24	11			"
		25	18			"
		26	25			"
			July			
			Aug.			
			Sept. 4			WATER IN CHANNEL DRY
			27	Dry		Water in channel only
			Oct. 4	Dry		
			Nov.			
10"						
			Dec. 7			"
			18			"

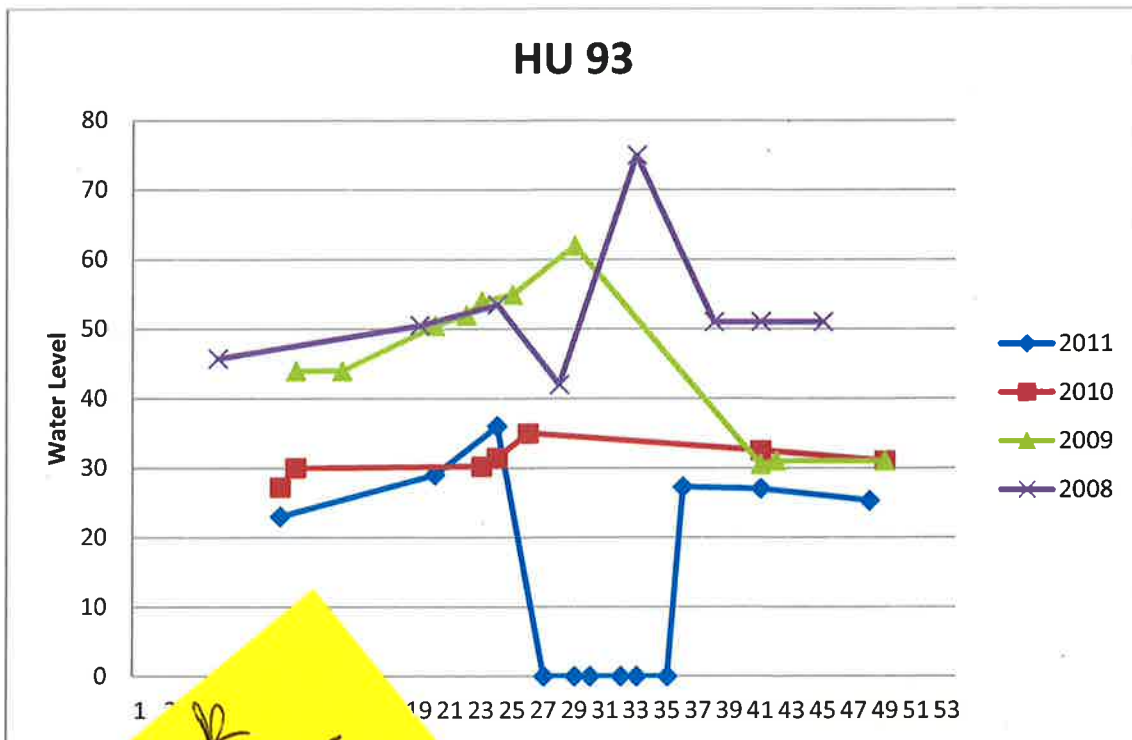
7' post

Unit: Hunt Unit 93

Acres:

2011 Activity: Evapotranspiration resulted in mudflats in mid-July. Unit was reflooded in mid-September with a Thompson Pump and was at good water level for hunt season.

Draw Down Years: 2011- couple dry months before hunt season



Unit is used for hunting and providing habitat for migratory birds and provide a quality hunt.

Objectives: Establish good annual plant production.

Strategies: Need to monitor for invasives, and possibly take more aggressive measures in management. 1. Evaluate for moist soil management for shorebirds, disk in late summer, allow to flood for 2013 spring shorebird habitat. 2. Remove hunt blinds. Burn if possible.

Management Strategy Constraints: This unit sits on high ground and flooding is costly & difficult.

Repairs Needed:

III. If this unit is maintained as a wetland, then the west and south dikes are in questionable shape & may degrade quickly with water against them year round. Consider rebuilding for better compaction, tile search, & higher dike tops.

Unit: **HU 93** - From waters surface to top of brace on screw gate. 32" is full pool

Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		11	Mar. 13			Water let out for burn
31"						
		14	Apr. 5	0		Burned March 26 th
		15	12	0		
		17	27	0		
		18	May 4	0		
		20	15	0		
		24	June 1	0		
			July			
			Aug.			
		36	Sept. 1	0.00		
		39	27	Dry		
			Oct.			
31"						
31"			Nov.			
			Dec. 7	Dry		
		18	Dec. 18	Dry		

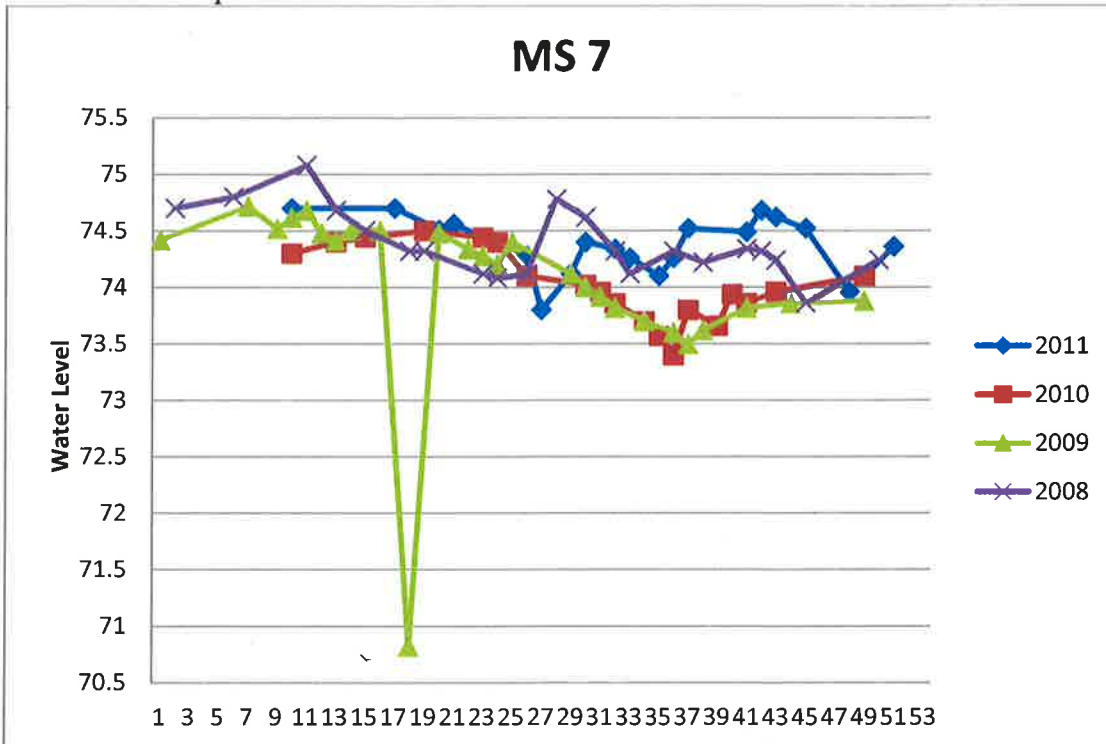
7 Post

Unit: MSU 7

Acres: 94

2011 Activity: Water levels were good throughout the year. Started pumping into unit in May and continued randomly throughout the rest of the year. **Watch for leak in discharge pipe when pumping in 2012.**

Draw Down Years: 2007 – previous fall draw down resulted in excellent spring bird use. Evapotranspiration led to saturated soils in June. Unit was flooded in late mid September when pump was replaced; 2006 – A draw down was attempted starting in May, but not achieved until mid July. Invasives were mowed and disked in early august. Unit was reflooded in mid August and managed for mudflats. Unit was reflooded in September; 2005 – Drawn down in June for construction. Unit dry except ditch by July. Reflooded in September.



Unit Goal: Provide migratory bird foraging and resting habitat. In addition the transitional areas on 7B will allow for easily accessible upland habitat for nesting as well as provide a gradient of water levels.

Objectives: Provide teal/shorebird habitat in spring.

Strategies: Evaluate 2011 crushing up flowering rush with marsh master, possibly drawdown for spring shorebirds, then disk and reflood. **MOVE BLIND 72**

Management Strategy Constraints:

Repairs Needed:

- II. Krause Rd is too low in the SW corner and needs to be raised to allow to manage against invasives with deeper water levels.
- III. Discharge pipe is possibly leaking.

Unit: MS 7- 3.14 on old gauge = 73.96 on new staff plate

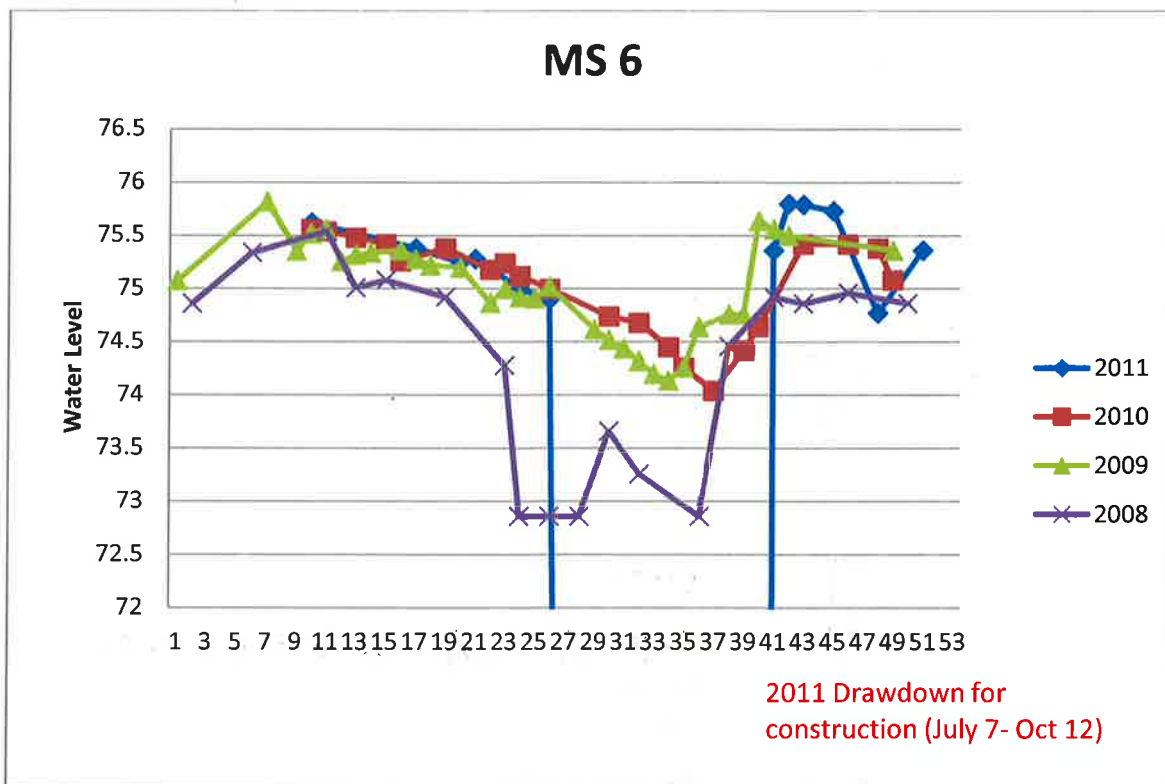
Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
		5	Jan. 30		74.5	
			Feb.			
		10	Mar. 8		74.5	
3.5	74.32					
		12	23		74.22	closed
		14	Apr. 5		74.10	
3.5	74.32	15	12		74.0	
		17	27		73.90	
					73.86	
		18	May 4		73.86	May 8 th 73.86 Open 3" at 1230 ^{9th} 73.74 1230 pm
		19	10		73.52	closed 4pm
		20	15		73.43	
		21	23		72.60	needs cleaning
		32	June 5		73.34 73.14	
		24	11		73.00	
		25	18		72.87	
		26	25		72.76	
		27	July 2		72.60	
		28	12		72.40	
		29	17		72.27	
		30	24		72.17	Unit dry - Water only in ditch
		32	Aug. 7		72.92	(July 31 Pump on 72.06 9:00)
		33	14		73.56	15 73.61 - pump off
		34	23		73.36	
		35	30 28		73.42	Pump on - 2 days
		36	Sept. 4		73.50	
		37	12		73.51	
						pumped up w/ chrisotoli 2 days
		39	27		73.82	
		40	Oct. 14		73.84	
3.0	73.82	43	23		73.82	
		44	30		73.80	
			Nov.			
			Dec. 7		73.78	
			18		73.84	

Unit: MS 6

Acres: 70

2010 Activity: Water was taken off unit in July for pipe repair and reflooded in October. We used MS6 to also fill HU6 for hunts. A new staff plate was installed in 2009 to reflect true elevations. $2.54 = 75.40$. Old plate was torn out in 2011 now must go by new gauge.

Draw Down Years: 2011- for repairs to structure pipe. 2008 – Drawn down for construction in early June. Reflooded in late July and again in September. 2006 – MS pump structure gate for MS6 leaked water out in early spring. Unit was then managed for mudflats and reflooded in Sept.; 2005 – Evapotranspiration led to mudflats in July. A hole in the north dike was repaired. The unit was reflooded in September.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as brood habitat.

Objectives: Manage for hemimars conditions.

Strategies: Maintain full pool. Repair leak from HU6.

Management Strategy Constraints: see repairs needed

Repairs Needed:

II. Screw gate in MS pump leaks. All gates in drop box need to be closed to maintain water in unit.

II. ditch along County Line Rd is not functioning at outlet in CC ditch that feeds the MS pump. Pipe may be collapsed, or silted in. (Evaluate over the course of the year: Appears to function currently.)

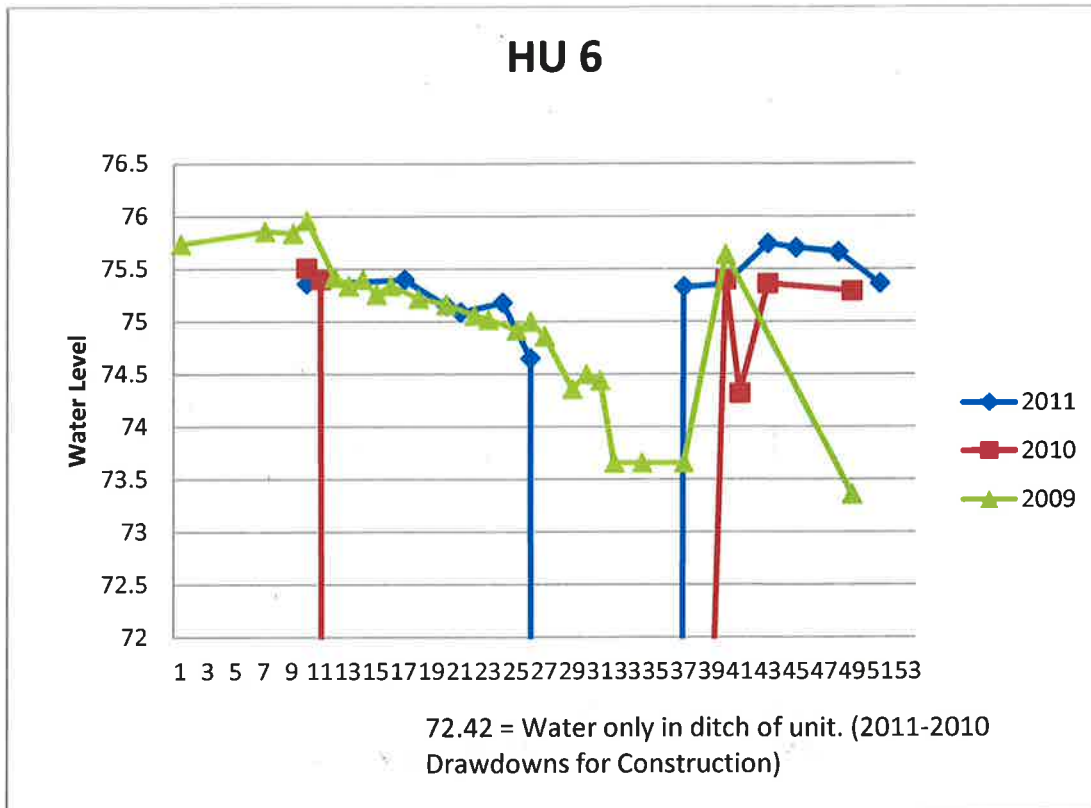
Unit: MS 6

Desired water level		Wk #	2011 Date	Actual Water level Staff reading	Notes
old	new			new	
		5	Jan. 30	75.50	
			Feb.		
2.4	75.26	10	Mar. 8	75.30	
		12	22	75.47	
		14	Apr. 5	75.37	opened at 9:45 a.m. closed 320 75.16
		15	12	75.10	
		17	27	74.90	
		18	May 4	74.88	
		20	15	74.85	
		21	23	74.68	Needs cleaning below plate
		22	29	≈ 74.5	
		23	June 5	≈ 73.5	"
		24	11	≈ 74.5	"
		25	17	≈ 74.3	"
		26	25	74.04	"
		27	July 2	73.80	"
1.5	74.36	28	13	73.95	John pumped water in from ditch
		29	17	≈ 73.20	
		30	24		Unit dry
		32	Aug. 7		" "
		33	14	≈ 73.80	Unit finally Turned on MS pump for 4hrs.
				≈ 73.80	
		36	Sept. 4		BELOW PLATE
1.5	74.36				
		39	27	Shutdown	For Repairs
		41	Oct. 14		water below plate
		43	23	73.26	New plate
		44	30	73.36	Take high water off before ice up
			Nov.		
			Dec. 7	73.50	
			18	73.61	

Unit: Hunt Unit 6

Acres:

2011 Activity: Mosaic of cattails mowed prior to fall flooding for waterfowl use areas. Opened for shorebird use in April and was completely drawn down in July until September reflooded through MS6 and MS ditch. North and west dikes were rebuilt. Draw Down: 2010 & 2011- for construction.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation. Spring shorebird habitat

Strategies: Late May – Mid summer drawdown. Heavy disk (2x) cattail/cottonwood areas only. Repair hole to MS6.

Management Strategy Constraints:

Repairs Needed:

I. Cofferd dam in MS ditch needs removed for drainage, eagle's nest will delay construction activities.

Unit: **HU 6** - Full pool 75.40? HU 6 is suitable for fall waterfowl when the unit is equalized with MS6 at 75.40 or 2.54 according to the old gauge.

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	5	Jan. 30	75.46	
	10	Mar. 8	75.30	
	12	22	75.45	
	14	Apr. 5	75.37	
	15	12	75.25	
	17	27	75.10	
	18	May 4	75.00	Dirty
	20	16	74.98	cleaned
	21	23	74.88	
	22	29	74.82	
	23	June 5	74.74	
	24	11	74.65	water level under plate
	25	18	74.55	"
	26	25	74.50	"
	27	July 2	74.30	"
	28	13	74.0	"
	29	17	73.8	"
	30	24		Not dry
	32	Aug. 7		" " water only in ditch
	34	23	74.0	getting H ₂ O from MS ditch
	36	Sept. 4		BELOW PLATE
	37	10	75.42	Begin flooding hunt unit gate closed
				12 75.36
	39	27	75.52	
75.40?	42	Oct. 14	75.76	
	43	23	75.74	
	44	30	75.72	
		Dec 7	75.6	
		18	75.65	

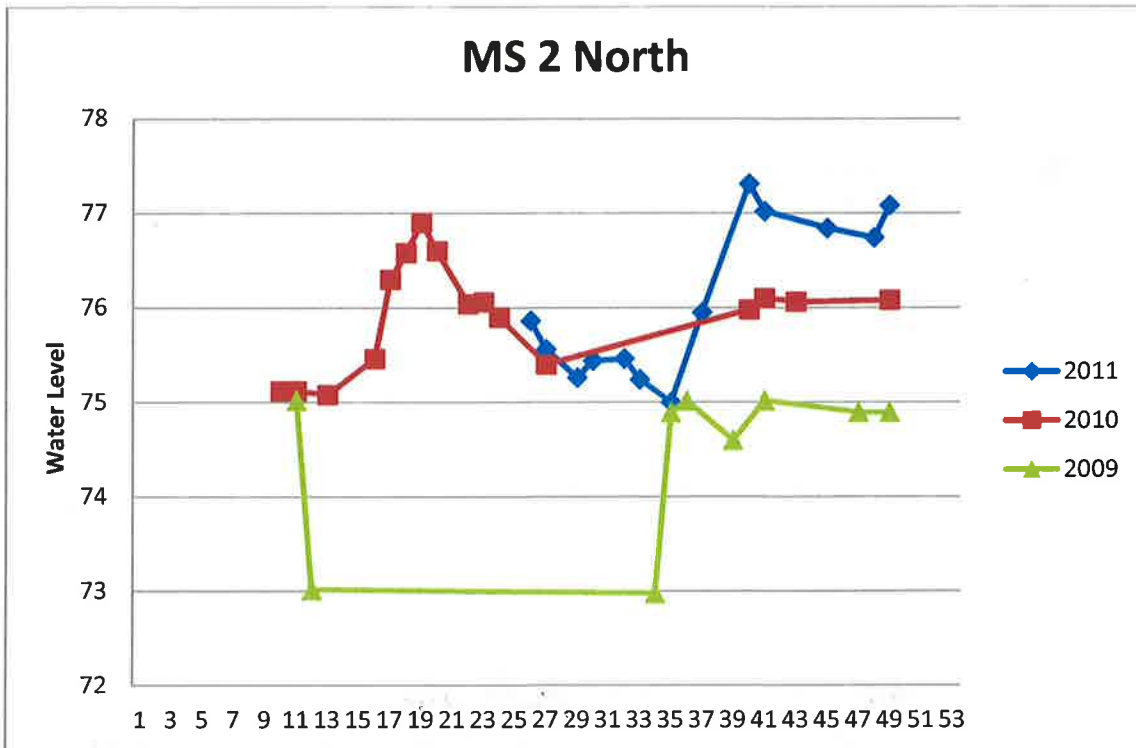
Unit: MS 2 North

Acres:

2011 Activity: Water was pumped into the unit in end of August through late September. At 77.46 there is water though the whole unit and about a foot of water in the middle.

Good trapping depth.

Draw Down Years: 2009 – March through mid August.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies: Fix holes-many. May need drawdown for repair at north end of ditch. Watch for invasives. Strip disk East-West and monitor response.

Management Strategy Constraints:

Repairs Needed:

II. Unit leaks into rail unit and west ditch when flooded.

Unit: MS2 North

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	5	Jan. 30	77.46	Good Trapping level water in 95% of unit
	12	Mar. 22	76.88	400 WF
76-77	14	Apr. 5	75.13	
	17	27	76.30	
	18	May 4	76.30	Remove some cattails
	20	15	76.22	
	21	23	76.02	
	22	29	75.98	
76.0	23	June 5		
	24	11	75.70	
	25	18	75.55	
	26	25	75.45	
	27	July 2	75.2	Muddy at gauge
	28	11	Dry	
	29	29	Dry	
	31	31	Dry	
	32	Aug. 7	Dry	
		Sept.		
		27	Dry	
77-77.5		Oct. 14	Dry	
		23	Dry	
		Dec 7	Dry	
		19	Dry	

7-12
4-7
12-18

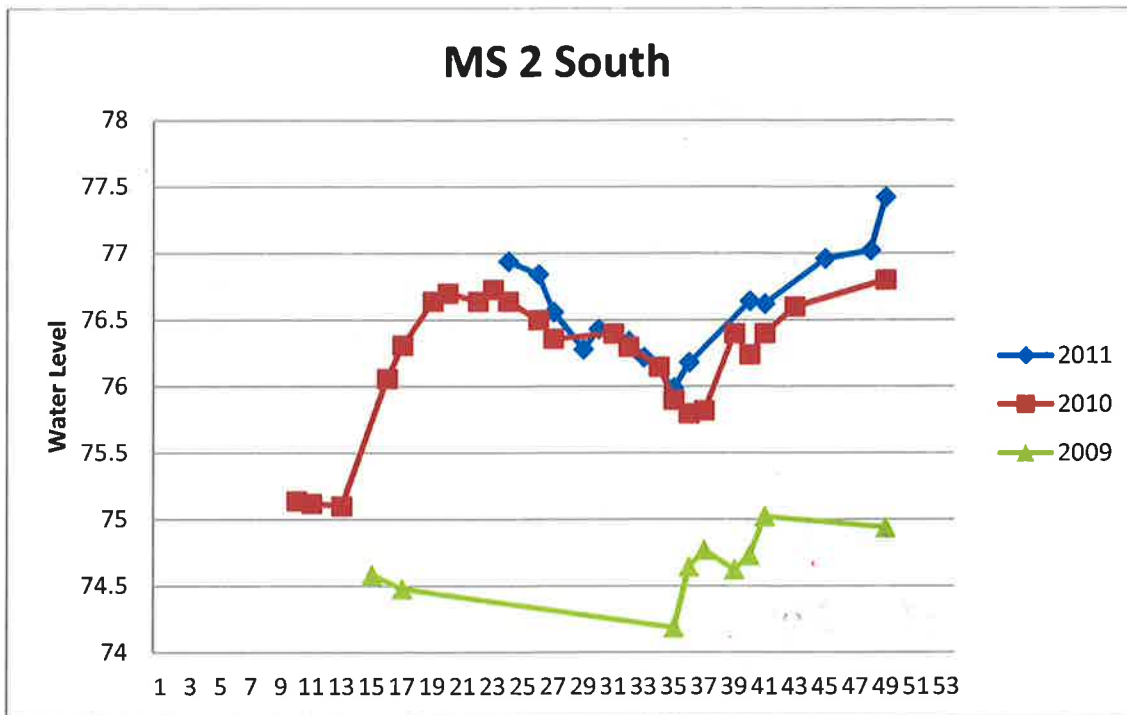
WL 76.88

Unit: MS 2 South

Acres:

2011 Activity: Water level was consistent with 2010 levels. In 2010 we tried to put water in unit though MS ditch but were unable to do so because ditch wasn't high enough. The west half of the unit that is higher had lots of annual grass germination (foxtail, timothy, panic grass) and no real problem species.

Draw Down Years: 2009 – March through mid August.



Unit Goal: Provide foraging and resting habitat for migratory birds as well as provide a quality hunting area.

Objectives: Manage for good annual plant production and establishment of some perennial vegetation.

Strategies: Maintain full pool. Fix numerous leaks in dikes. Evaluate for Fall shorebirds.

Management Strategy Constraints:

Repairs Needed:

- Dike repairs needed.

Unit: MS 2 South

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	5	Jan 30	76.95	
	12	Mar. 22	77.50	800WF
76.0	17	Apr. 27	76.00	
76.0	18	May 4	76.88	
	20	15	76.90	
	21	23	76.80	
	22	29	76.72	
	23	June 5	76.62	
	24	11	76.48	
	25	18	76.36	
	26	25	76.28	
	27	July 2	76.06	
	28	11	75.80	
	29	17	75.67	
	30	24	75.57	7/31 - 75.38
	32	Aug. 7	75.20	Unit dry
		Sept.		
76.9-77	39	27	75.02	unit dry - dike rebuild
	42	Oct. 14	Dry	
	43	23	Dry	
		Nov.		
		DEC 7	Dry	
		18	Dry	

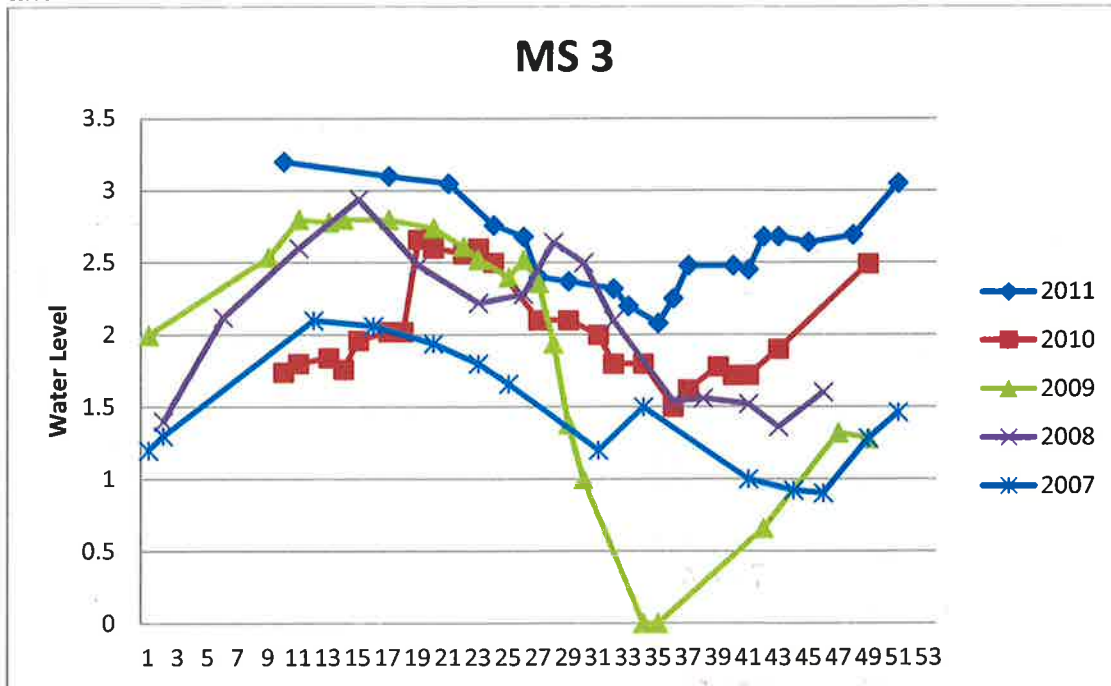
20
10-8
Cattail Swamp
77.42

Unit: MSU 3

Acres: 225

2011 Activity: Water was high most of 2011 because ditch was so high all year from MS4 structure being broke and leaking into the ditch. We needed to add one board to the structure in September because water was flowing into the unit from pumping up the ditch.

Draw Down Years: 2009 – drawn down July 13 through October 21 for construction & fall shorebird migration. Excellent shorebird use & good germination of millet, but too late to flower.



*2007 – early in year gauge moved.

Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Maintain as hemi marsh. Provide emergent and submergent marsh habitat for waterfowl, swans, and rails.

Strategies: Maintain full pool

Management Strategy Constraints:

Repairs Needed:

- II. All dikes need muskrat damage repaired.
- III. Leak stop log structure dikes smoothed out.

Unit: MS 3

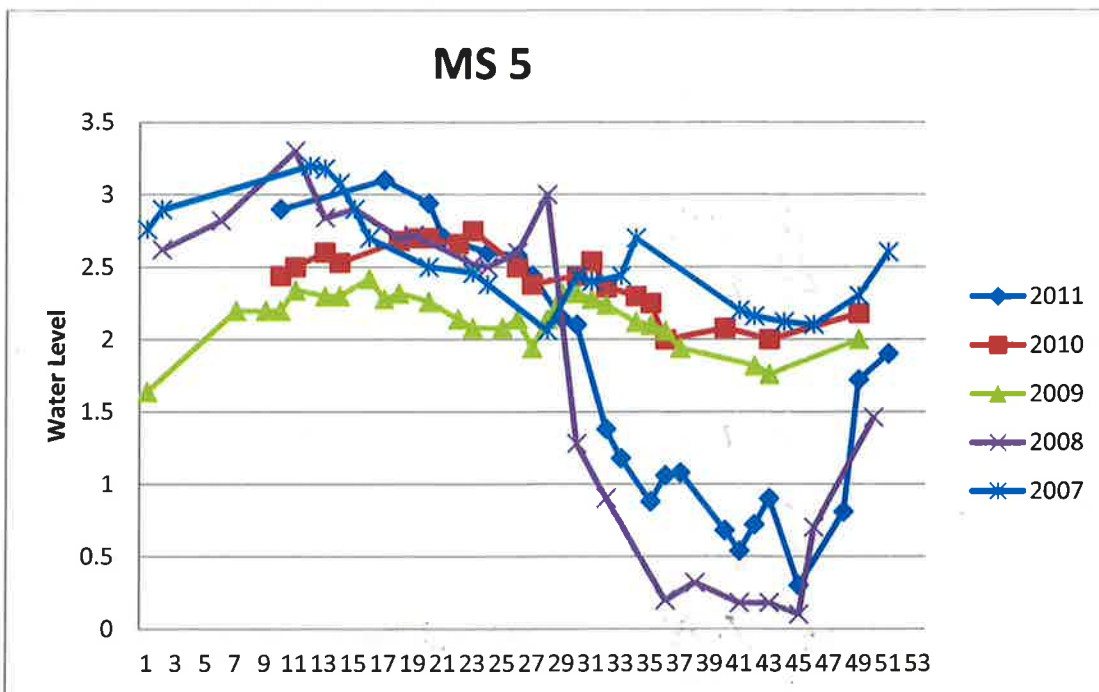
Desired water level		Wk #	2011 Date	Actual Water level Staff reading	Notes
old	new			new	
		5	Jan. 30	3.1	
			Feb.		
		10	Mar. 8	3.0	
		12	"	3.04	Flowing out
2.5					
		14	Apr. 5	2.9	
		15	12	2.82	
		17	27	2.71	
		18	May 4	2.64	
		20	15	2.68	
		21	23	2.61	
		22	29	2.64	
		23	June 5	2.60	
		24	11	2.46	
		25	18	2.39	
		26	25	2.32	
		27	July 2	2.18	
		28	13	2.0	
		29	17	2.06	
		30	24	1.84	31 - 2.76
		32	Aug. 7	1.66	
		33	14	1.68	
		34	23	1.52	
		36	Sept. 4	1.6	
		37	16	2.05	
2.3		39	27	2.29	
		42	Oct. 4	2.26	
		43	22	2.26	
		44	30	2.32	6.2 TRUS on N side
		31		2.34	575.196 - water level on new board - needs better photo
			Nov.		
			Dec. 7	2.24	
			18	2.3	

Unit: MSU 5

Acres: 256

2011 Activity: Water was drawn down for shorebird habitat in September and remained low until December. Thompson pump was used in the NE corner of the unit to draw water down to the maximum capacity, lots of good shorebird use in these months.

Draw Down Years: 2011- Draw down in September for shorebird use put water back in the unit in December. 2008 – drawn down in early July and dry on the west side by August 1 for construction on west dike. Excellent shorebird use on eastern half of unit. Reflooded in early November; 2005- Drawn down in mid-March and reflooded in September when able (low lake levels were a problem for pumping)



Unit Goal: Provide a resting and feeding area for migratory birds.

Objectives: Manage for hemimarsh conditions and prevent further establishment of Purple Loosestrife.

Strategies: Maintain full pool.

Management Strategy Constraints:

Repairs Needed:

III. Monitor SW screw gate for leaks

Unit: MS 5

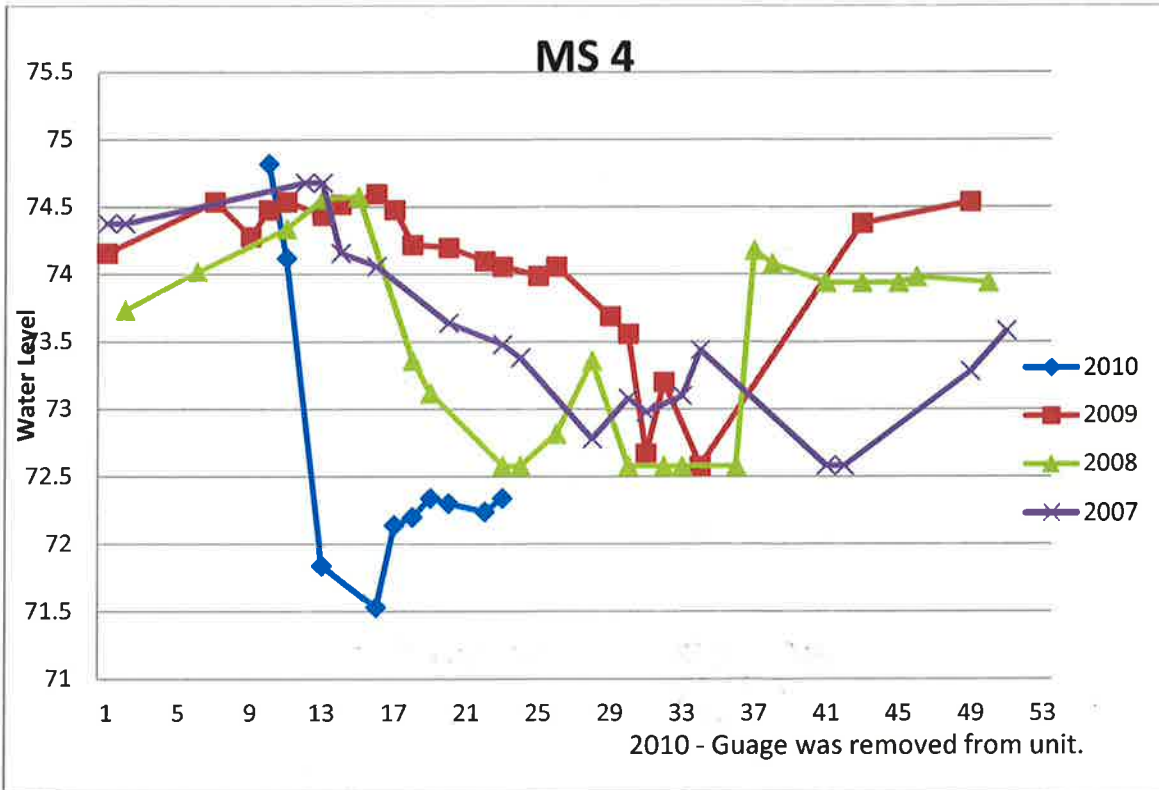
Desired water level		Wk #	2011 Date	Actual Water level Staff reading	Notes
old	new			new	
		5	Jan. 30	2.10	
			Feb.		
		10	Mar. 8	2.2	
		12	22	2.40	
2.5-2.7					
		14	Apr. 5	2.35	
		15	12	2.20	
		17	27	2.10	
2.5		18	May 4	2.04	
		20	15	2.10	
		21	23	2.00	
		22	29	1.94	
		23	June 5	1.86	
		24	11	1.76	
		25	18	1.67	
		26	25	1.62	
		27	July 2	1.50	
		28	10	1.45 1.36	
		29	17	1.17	
		30	24	1.12	31 - 1.04
		32	Aug. 7	0.94	
		33	14	0.98	
		34	23	1.20	Filling from MS ditch - open 8"
		35	29	1.84	
		36	Sept. 4	2.00	
		37	12	2.98	
		39	27	2.50	
2.0-2.2		42	Oct. 4	2.40	
		43	23	2.40	
		44	30	2.42	
			Nov.		
			Dec. 7	2.40	
			13	2.45	

Unit: MSU 4

Acres: 112

2011 Activity: The water control structure has replaced in 2010 but blew out in August while trying to fix a leak. Structure will need replaced this upcoming year and staff gauge will need replaced. Extensive amounts of flowering rush and Phrag in this unit.

Draw Down Years: 2009 – leaking structure resulted in a draw down in July through late October. 2008 – Vandalism of the NE screw/flap gate drew water levels down in early April. The unit was then managed for spring shorebird habitat, and reflooded in early September. Excellent shorebird use and millet germination. 2007 – Evapotranspiration resulted in a partial drawdown in July and again in September through November. 2004 – Drawn down in April for shorebirds and to encourage aquatic veg, reflooded in late October.



Unit Goal: Provide a nesting and feeding area for migratory birds as well as brood habitat.

Objectives: Repair east dike/road.

Strategies: DD for WCS repair/replacement. Take water off early spring and evaluate structure.

Management Strategy Constraints:

Repairs Needed: Structure replaced or fixed

- New Staff Gauge installed

Unit: MS 4 72.88- water only in ditch and low areas on north side. 73.98 required to have water across whole unit (2" on high ground of west side)

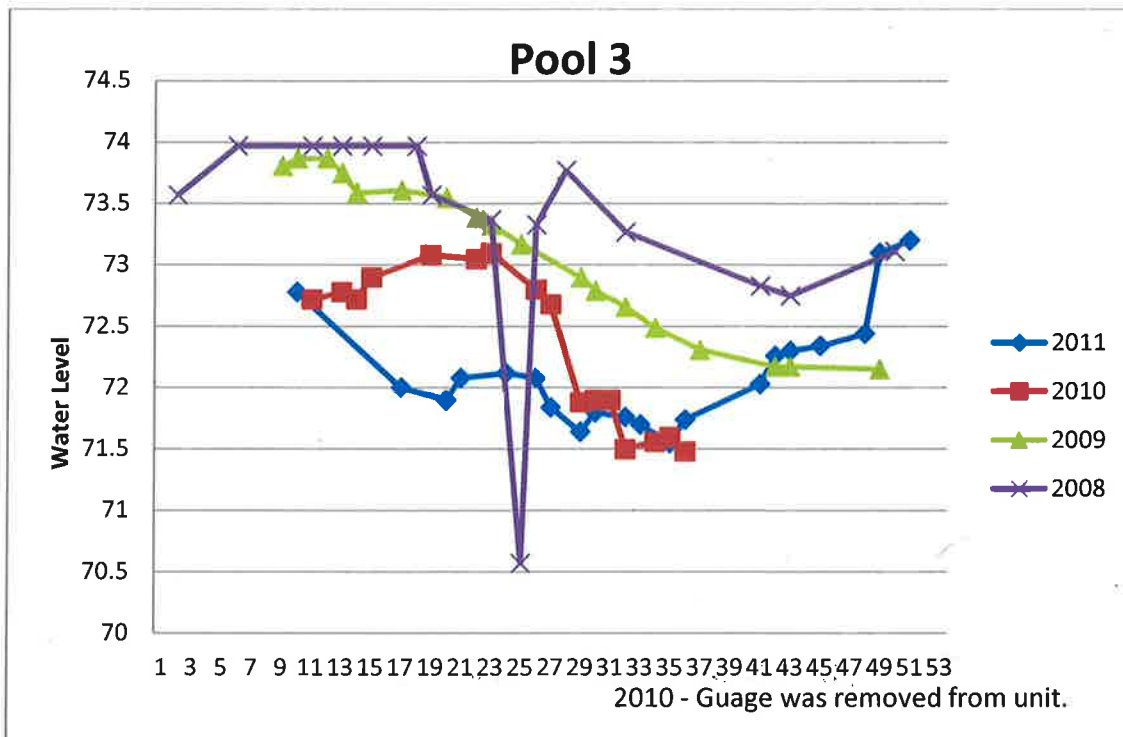
Desired water level		2011 Date	Actual Water level Staff reading	Notes
		Jan.		
		Feb.		
		Mar.		
		Apr. 5		Draw down for construction Being Drawn down, shorebird use.
		May 4		
				Reflood
	21	23		Water in ditch, draining for structure repair
75.0		June		
		July		
	20	24	No Gauge	Unit dry
	22	Aug. 7	" "	
	30	14	" "	
		Sept.	NO PLATE	
	34	27		Unit dry, adding water
74.38	42	Oct. 14		Water in 3/4's of unit
	43	23		About the same
	43	24	73.58	New plate, might need to order upper range
	44	30	73.60	
		Nov.		
		Dec. 7	73.58	
		18	73.62	

Unit: Pool 3

Acres: 240

2011 Activity: Tried to keep water lower in this unit for possible burn this year but because of rain and high lake levels it was hard to keep unit dry. A new staff plate was installed 2010. $72.2 = 1.63$. ($72.2 = 572.2\text{ft}$)

Draw Down Years: 2010 – Drawdown from October till current. 2009 – Evapotranspiration resulted in low water levels, with water only on eastern half in mid August.



Unit Goals: The primary objective of this unit is to provide food resources and resting cover for migratory waterfowl, waterbirds, nesting Bald Eagles and other wetland animals. In addition water levels are managed to encourage native wetland plants and discourage exotic invasive species.

Objectives: Manage for hemi marsh conditions.

Strategies: Maintain full pool. Possible fall drawdown and burn.

Management Strategy Constraints:

Repairs Needed: Possibly need pipe in structure looked at holes are developing

Unit: **Pool 3** - (72.2=1.63)

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	8	Jan. 30	73.48	2.7
		Feb.		
	10	Mar. 8	73.60	3.0
			73.74	Water on cattail area, W side, water in woods
73.87 - 74.17	14	Apr. 5	73.70	
	15	12	73.60	
	17	27	73.49	
	18	May 4	73.46	
	20	16	73.49	
	21	23	73.48	
	22	29	73.36	
	23	June 5	73.30	
	24	11	73.18	
	25	18	73.08	
	26	25	72.94	
	27	July 2	72.86	Draw Down?
	28	10	72.70	
	29	17	72.52	
	30	24	72.42	7/31 - 72.30
	32	Aug. 7	72.22	
	33	14	72.40	
	34	23	72.04	Burn?
	36	Sept. 1	CANNOT READ	
	39	27	71.98	
	42	Oct. 14	71.90	
72.67	43	23	71.86	
	44	30	72.00	
		Nov.		
72.67				
		Dec. 7	71.86	
		16	~ 72	

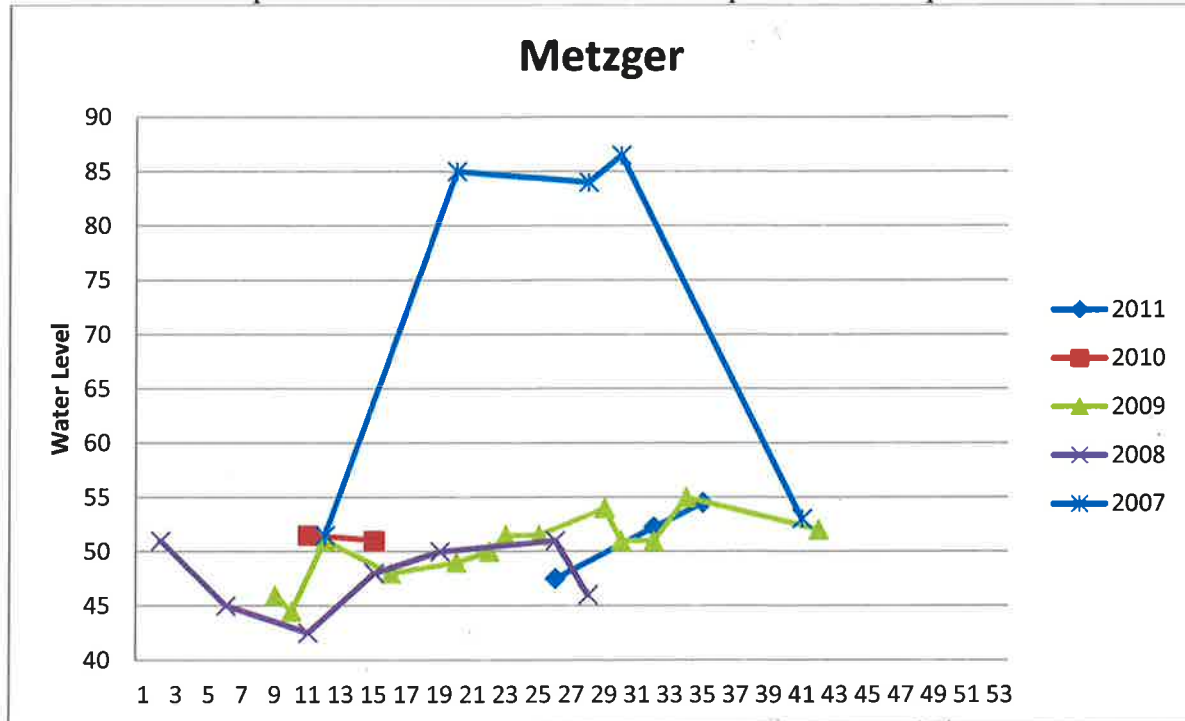
Unit: Metzger Marsh

Acres:

2010 Activity: N/A for 2010 /2011

Draw Down Years: 2007 – Drawn down by mid May and reflooded in September; 2004 – Drawn down mid-May and reflooded early August.

For chart, remember high water number readings, mean lower water levels. Water is measured with a tape measure from waters surface to top of east lower platform.



Unit Goal:

Objectives:

Strategies: Spring DD

Management Strategy Constraints:

Repairs Needed: DOW waterfowl hunt needs.

Note: Gauge on outside of pump structure 3 full pool – 24” avg, 6” on back, 7’+Deep

Unit: **Metzger Marsh** - Measure from waters surface to top of lower platform on unit side. Maintain full pool for control of invasives.

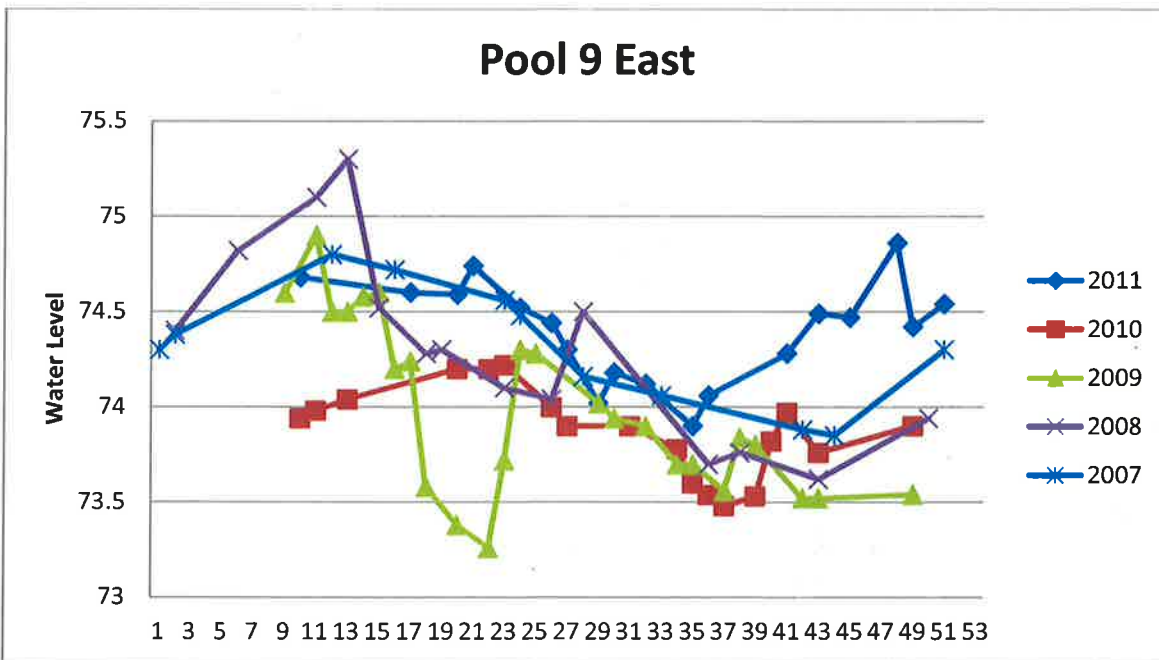
Desired water level		Wk #	2011 Date	Actual Water level Staff reading		Notes
old	new			old	new	
			Jan.			
			Feb.			
		12	Mar. 22	37 1/2		
50"						
			Apr.			
			May			
			June			
			July			
			Aug.			
			Sept.			
			Oct.			
			Nov.			
			Dec. 7			

Unit: Pool 9 East

Acres: 77

2011 Activity: No water was pumped in or out of this unit through 2009. Water levels fluctuated slightly but I think 75.3 is too high for this unit in April. A new staff plate was installed. 1.32=73.62.

Draw Down Years: 2009 – drawn down for 1 month (mid may through mid June) for construction. Reflooded in June. Evapotranspiration resulted in low water levels and small areas of mudflats through the fall; 2006 – March draw down for April burn. Reflooded in April after burn with portable pumps. Flooding took longer than expected and unit greened up before flood. Reed canary grass was sprayed a few weeks after.



Unit Goals Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions.

Strategies: Maintain full pool. Evaluate for flowering rush/ RCG treatment. Possible fall shorebird unit.

Management Strategy Constraints:

Repairs Needed:

Unit: Pool 9 east - 73.6 = 2" or less over most of unit (excluding borrow area)

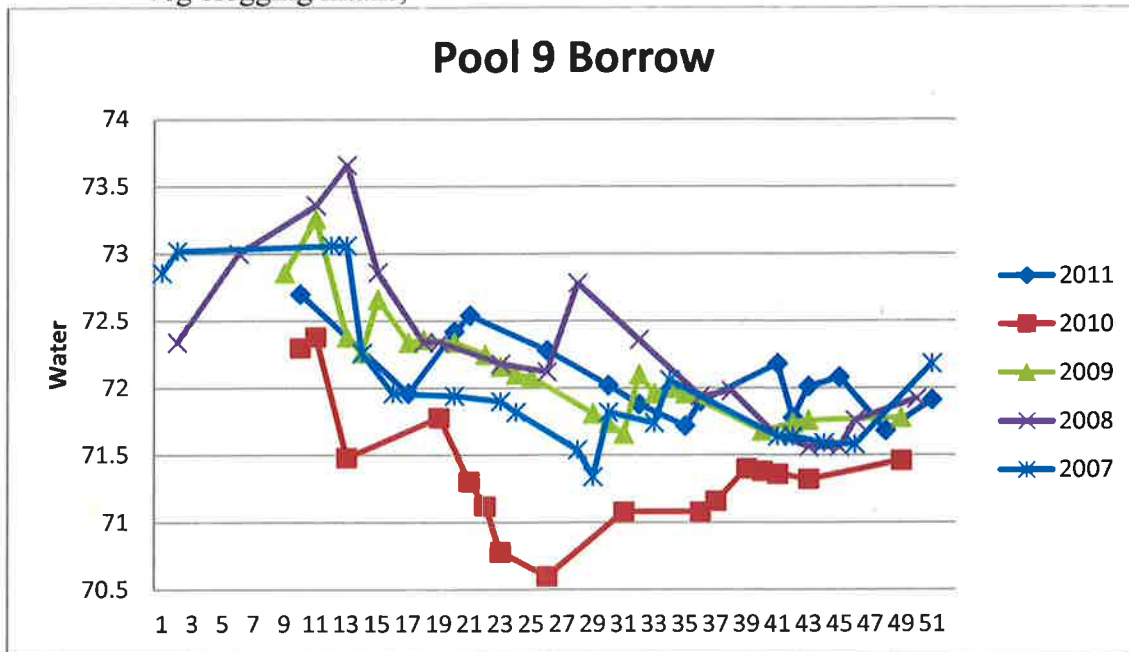
Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	5	Jan. 30	74.79	
		Feb.		
		Mar. 8	74.90	
	10		75.05 2.86	28-10" clearance. Water to road edge of SE corner 500 WF
			75.0 75.0	Opened
74.8?	14	Apr. 2	73.83	
		5	73.80	WF USE - Heavy
	15	12	73.78	
	16	19	73.76	27-73.58
	18	May 4	73.58	
	20	12	73.60	
	21	23	73.48	
	22	29	73.44	
	23	June 5	73.36	
	24	11	73.26	
	25	18	73.15	
	26	25	73.10	
	27	July 2	72.90	
	28	12	dry	
	29	17	dry	
	30	24	dry	
	32	Aug. 7	dry	
	33	14	"	
	34	23	73.52	- Lots of Geese, Mall, BWT, AMWI
	35	29	73.96	- Stopped pumping w/ Thompson
	36	Sept. 4	10K	
	39	27	73.84	
>73.6	42	Oct. 14	73.74	
74.0?	43	23	73.74 73.72	
	44	30	74.52	
		Nov.		
		Dec. 7	73.11	
		18		CANT READ

Unit: Pool 9 borrow area

Acres: 38

2011 Activity: Great waterfowl use in March thousands of ducks used this unit. Pumped some water out in November to get levels closer to lake level. A new staff plate was installed, 1.62=71.88.

Draw Down Years: 2010 – great annual plant response. 2005 – Unit was dewatered by mid-May. Good veg response. Unit was reflooded in September, but had difficulties with ditch veg clogging intake, and low lake levels.



Unit Goals: Provide habitat for waterfowl, wading birds, and shorebirds. Provide public use waterfowl hunting opportunities.

Objectives: Obtain 19 acres of deep to shallow submergent vegetation and 19 acres of deep to shallow emergent vegetation. Control Eurasian watermilfoil. Maintain 3 water blinds for waterfowl hunting season.

Strategies: Maintain full pool. Modify pump structure station with “Y” valve for 2 way pumping.

Management Strategy Constraints:

Repairs Needed:

-Y valve on pump to pump in or out (won't need to change pipe over)

Unit: Pool 9 borrow area (1.62=71.88)

28th
1930

Desired water level	Wk #	2011 Date	Actual Water level Staff reading	Notes
	5	Jan. 30	72.36	
		Feb.		
	10	Mar. 8	72.61	
	12	22	72.90 272	
71.96(1.7)	13	28	72.9	
	14	Apr. 5	72.14	
	15	11	72.09	
		12	72.05	
	17	27	71.83	
	18	May 4	71.88	Pump unit down
	20	15	71.96	
	21	23	71.82	
	22	29	71.76	Mudflats
	23	June 5	71.86	
	24	11	71.62	
	25	18	71.54	
	26	25	71.48	
	27	July 2	71.36	
	28	12	71.22	
	29	17	71.18	
	30	24	70.92	Water below gauge, but still in unit 7/31 - Same
	32	Aug. 7	Same	"
	33	14	Water below gauge	Reflood
	36	Sept. 4	Below Plate	
20.6 ^{old}		27	Below Plate	33 TRUS
	42	Oct. 14	0.60 on old plate	28 TRUS
71.06	43	23	70.72	New plate added
	44	30	71.72	
		Nov.		
		Dec. 7	70.20	
		14	70.77	

Unit: Darby Pump Operations & Pump Ditch settings

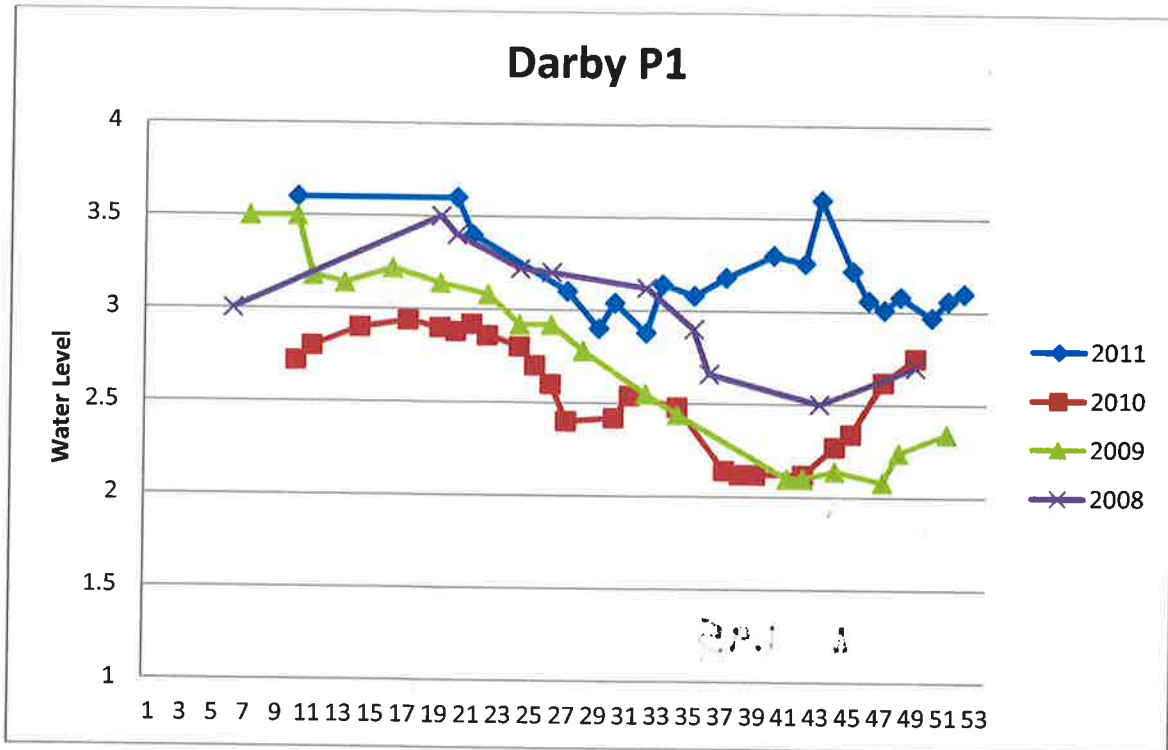
Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
		Jan.		
		Mar.		
				Open ditch to lake ASAP
		Apr.		
		May		
		June		
		July		
		Aug.		
		Sept.		
		Oct.		
				Open ditch to lake b4 ice

Unit: Darby Pool 1

Acres: 200

2011 Activity: Water was consistently high this year was hard to move water out because of high lake levels.

Draw Down Years: 2007 – gauge moved over winter resulting in inaccurate water levels goals, so low water & evapotranspiration led to mudflats in July, rain events in August reflooded unit. 2003 or 2004?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a hemi marsh rich in invertebrates and decrease P. Loosestrife infestations.

Strategies: Manage unit at full pool

Management Strategy Constraints:

Repairs Needed:

Unit: **Darby Pool 1**

Maintain full pool. Significant amount of mudflats exposed at 1.7

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
4		Jan. 23	3.26	1/3-3.14 1/10-3.12 1/17-3.18 1/24-3.25 1/31-3.14
6		Feb 6	3.0	2/7-2.98 2/15-2.98 2/20-3.0 2/29-3.08
10		Mar. 8	2.8	Trapper had structure open to ditch. I closed it.
12		27	2.84	
14		Apr. 5	2.80	
17		27	2.60	
18		May 5	2.58	
20	3.4	14	2.65	
24		June 11	2.25	
27		July 2	2.06	
28		10	1.99	
		11	1.95	
31	1.66	23	1.74	- mud flats outside gauge area
		32 Aug. 7	1.76	"
		33 14	1.78	
		34 20	1.70	
		35 30	1.66	
		36 Sept. 4	1.65	
		6	1.98	10 2.27 closed
		12	2.38	
	2.6-2.8	14	2.51	17 2.69 18 2.82 good water west side could manage 2.4-2.6 for sale
		21	2.78	
		42 Oct. 14	2.80	
		43 23	2.40	500+ MALL 100+ WODU
		44 30	22.90 (2.90)	500+ MALL, 50+ CA 60, 15 BUFF, 100+ WODU, 200+ COT'S, 20 RDBY, 20 WSHO
		12/5/12	22.91 (2.91)	Possible small leak, possible culvert east structure - 1000WF
		12/18	22.99	
				10/24 New Plate 2.78 = 572.77

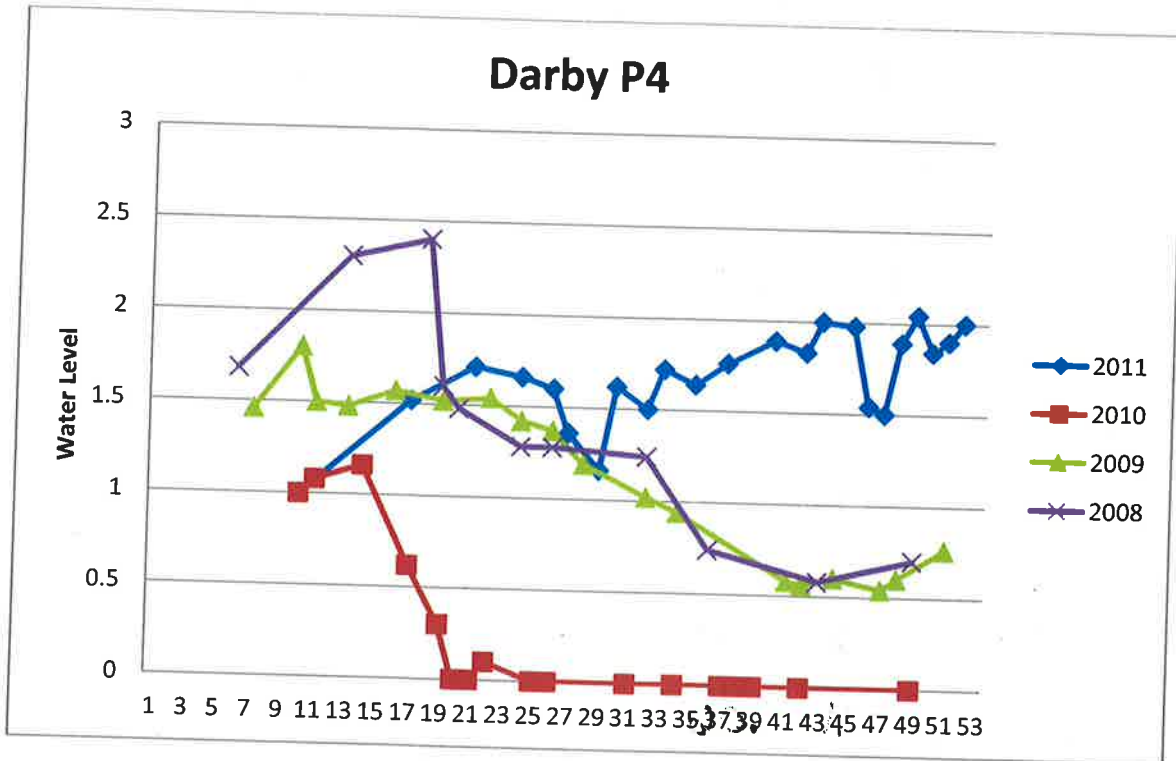
7 1/2 ft post

Unit: Darby Pool 4

Acres: 170

2011 Activity: Water was drawn down in 2010 which led to good vegetation and bird use. This year unit was also consistently high because of high lake levels.

Draw Down Years: 2010 – From May till September very good vegetation. Thousands of ducks used this unit.



Unit Goal: Provide marsh habitat for migratory birds.

Objectives: manage for plant diversity and hemi marsh conditions.

Strategies: Draw down for spring shorebird migration and to encourage vegetation growth. Bottom was consolidated by 2010 drawdown; drawdown in 2012 should help re-establish vegetation.

Management Strategy Constraints: Unit has a history of purple loosestrife infestations. Particularly along the SE corner.

Repairs Needed:

Unit: Darby Pool 4

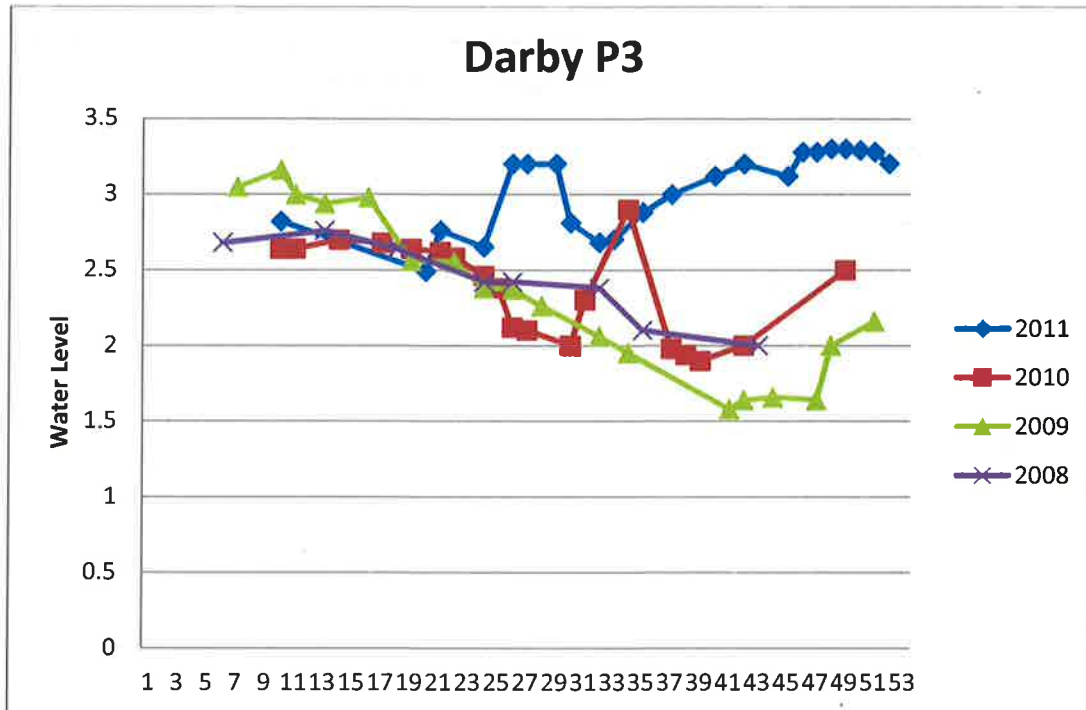
Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
		Jan 23	2.10	1/3-2.0 1/10-2.0 1/17-2.08 1/24-2.12 1/31-2.0
		Feb 6	1.95	2/7-1.92 2/15-1.92 2/20-1.90 2/29-2.0 3/6-1.45
		Mar. 8	1.4	
		27	1.5	
	1.5			Open to lake?
		14 Apr. 5	1.45	Beaver activity by structure
		17 27	1.2	Draw down
		18 May 5	1.21	
		20 14	1.30	
				Mudflats
		24 June 11	0.30	
		27 July 2	0.02	
		10	~ 0.10	
		28 11	.06	
		30 23		dry under gauge
32	Aug 7	Aug. 23	0.30	
		33 14	0.36	
		34 20	0.28	
		35 30	0.28	
		38 Sept. 18	0.22	-- good depth, Fall Target 8-12" water
		21	0.18	
		42 Oct. 14	0.14	Goodwell, Mill, Woodh
		43 23	0.12	GADW 250+, 250+ Woodh, 100+ MALL, 50+ Goot
		44 30	71.72	New plate (21000 Ducks (MALL, GADW, Woodh) 200 Goot, 1000 CAGU
		12/5/12	71.82	~ 650 WPS
		12/18	71.91	
				New Plate 12/24 0.14 = 571.68

Unit: Darby Pool 3

Acres: 25

2011 Activity: Ditch flowing into unit in July bringing water level up needed to add a board to the agri drain to hold water in unit.

Draw Down Years: 2006?



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Provide a combination of both annual and perennial vegetation in a hemimarsh.

Strategies: Evaluate for fall drawdown.

Management Strategy Constraints:

Repairs Needed:

II. South dike needs raised

Unit: **Darby Pool 3**
Full pool (2.64)

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
		Jan 23	3.27	1/3-3.18 1/10-3.14 1/17-3.22 1/24-3.22 1/31-3.19
		Feb 6	3.18	2/7-3.15 2/15-3.20 2/20-3.14 2/29-3.20 3/6-3.20
		Mar. 4	3.2	
		12 27	3.12	
		14 Apr. 5	3.1	
	2.5-2.6			
	18	May 5	2.9	
	20	14	2.95	
		24 June 11	2.56	
		27 July 2	2.42	
		28 10	2.34	
		11	2.30	
		13	2.10	7/31 - 2.06
		22 Aug. 7	2.62	
		23 14	2.10	
		24 20	2.0	
		35 30	2.08	
		36 Sept. 4	1.90	
		38 18	1.98	Pull 2 board, Flow in Pump 1 off, Pump 2 still on
		21	2.38	- Replace 2 board, less 1" flow in
		42 Oct. 14	2.42	
		43 23	2.40	12 MALL
	44 2.5 (old)	30	2.38	New p.l.h 10/24 2.42 = 572.28
		12/5/12	2.44	- No WF
		12/18	2.49	

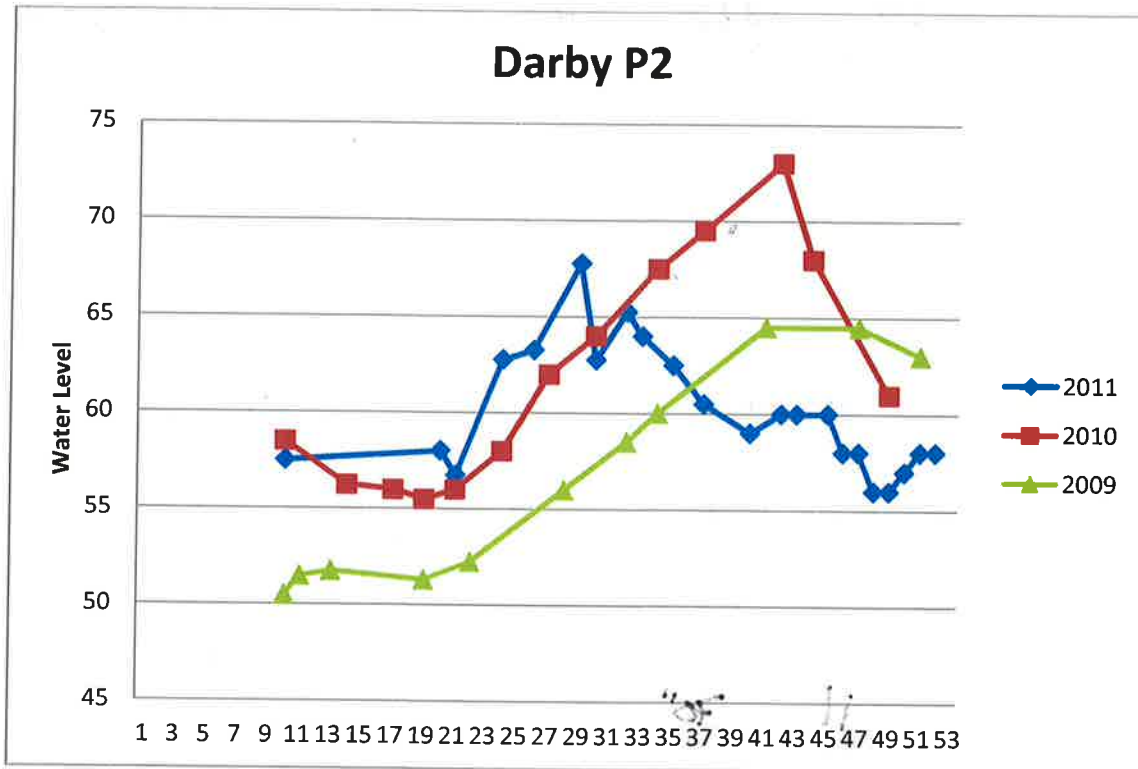
7' post
0

Unit: Darby Pool 2

Acres: 25

2011 Activity: Boards are set at 60" seems to be a good level for this unit. 63 or 64" is about full pool.

Draw Down Years: unknown



Unit Goal: Provide resting and foraging habitat for migratory birds.

Objectives: Manage for hemi marsh conditions

Strategies: Manage unit at full pool. Install new water gauge. Consider drawdown, spray, and disk of purple loosestrife.

Management Strategy Constraints:

Repairs Needed:

Maintain full pool. – Measure water surface to top of box on SW corner.

7 ft. post

IF greater than $70\frac{1}{4}$ ", $X - 70\frac{1}{4}$, convert to Feet (hundredths)
 Subtract from 571.98

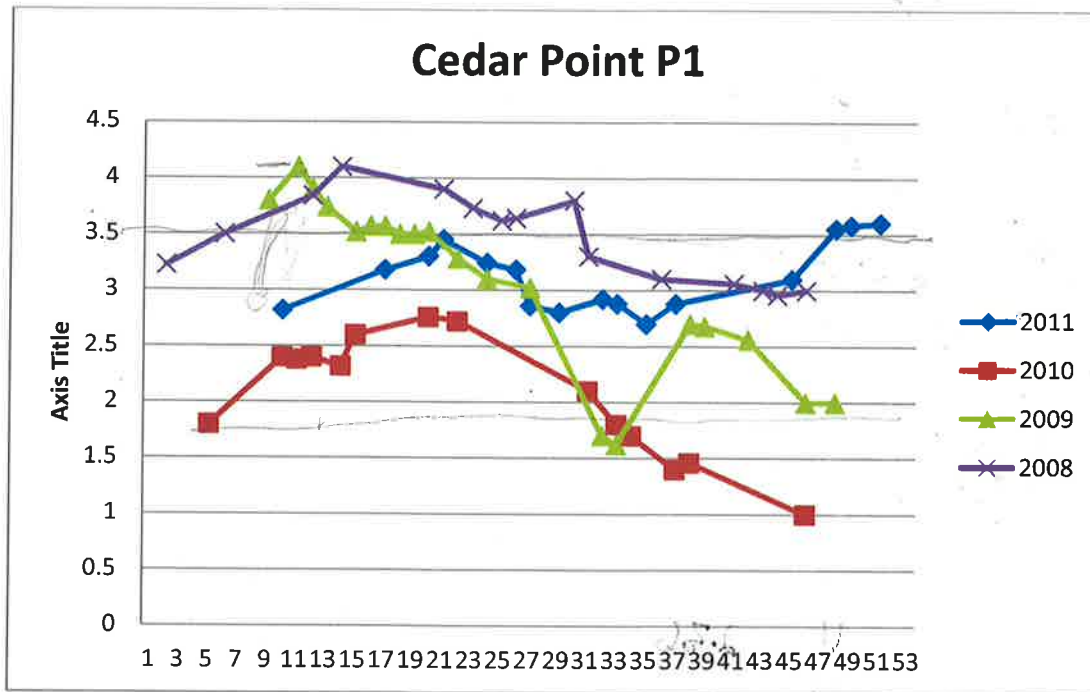
IF less than $70\frac{1}{4}$ " $70\frac{1}{4} - X$, convert to feet-hundredths ⁶²
 add to 571.98

Unit: Cedar Point Pool 1

Acres: 1,460

2011 Activity: Unit stayed consistent all year. Siltation is blocking the lake intake. In December free flowed water from pool 1 into lake we also opened pool 2 to let water flow into pool 1 because 2 was too high.

Draw Down Years: 2010- was a true drawdown due to drought. 2009, 2007, 2006, 2005
- Evapotranspiration leads to partial draw down.



Unit Goal: Provide nesting, foraging, and resting habitat for a variety of migratory birds and wildlife. To maintain populations of rare and endangered plants.

Objectives: Maintain full pool.

Strategies: Run both pumps for 1-2 weeks out in early spring in an attempt to blow out siltation. Evaluate and dredge later in the year if needed and funds allow.

Management Strategy Constraints:

Repairs Needed:

- I. West side WCS needs temporarily plugged & replaced.
- I. Pump1 needs repaired.
- III. Possible long term project to fix sediment problem in the pump.

8/10 Pump 1: 7550.8
 1:45pm W/S 2: 8390.8

Add 10 to gauge

Unit: Cedar Point Pool 1

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
5	5	Jan. 30	3.7	
10	3.7-4.0	Mar. 8	3.7	
12		22	3.63	Pumps off
14		Apr. 4	3.59	Structure Really leaking
15		12	3.56	Log in front of structure may need pump to move
16		16	3.34	needed to get flow out
		19	3.30	3-3.30 Dirty
		May		
20		16	3.08	
21		29	2.90	
24		June 13	?	covered in dirt
25		18	"	after construction
26		25	"	"
		July		
28		16	2.40	hopefully w/in .25 feet
		17	2.36	
29		17	2.34	
30		Aug 25	2.10	turned 1 pump on at 11am
		27	2.08	↑ 7350.5 hours 7437.6 hours at 11:30
Aug 7	8337.5	31	1.92	7504.5 = 66.9 hrs = 87.1 hours
8/7	1.90	8/13	≈ 1.90	mud
8/16	2.00	Sept. 4	5	
8/23	2.18	21	2.38	
8/30	2.20			
		Oct. 4	2.46	
		14	2.48	
		23	2.46	>1000 ducks (MAIL, WODU, GADW, BOTE, GWTE) 100 CAGO
		30	72.12	
		7667	72.14	
		18	73.2 72.2	
		Jan 9	572.29	

Pump 1 off
 7/31 12:00pm

7/31
 12:00pm
 Pump 2 on
 8256

8/16
 789
 P2 8430 (P1) 142
 (P2) 120
 8/23 7831.7
 8550.1

Pump 1

8/30 pump 2 off, been off for a week or so.
 8/30 Pump 1 7947.5 115.8 hrs (168 hrs / 7 days)

9/17 Pump 1 8007.8
 Pump 2 8664.3 - 174 hrs 10.2 hrs/day
 10/4 Pump 1 8181.7
 Pump 2 8664.6

10/23 P1 8202
 P2 8664

Saw 5 COME on Lake
 74.57

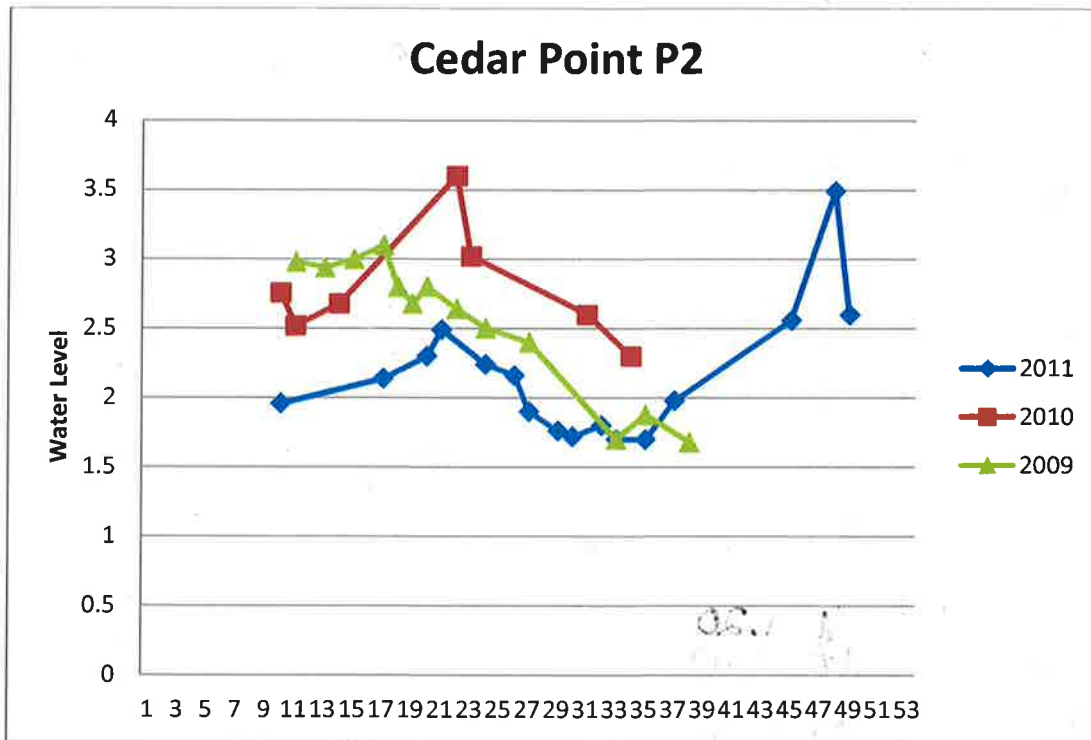
10/25
 2.46 572.21 64

Unit: Cedar Point Pool 2

Acres: 135

2011 Activity: The gate was opened in June and December to pool 1 help keep water out of Toledo Water Plant property and to add to pool 1. There is not much management capabilities in this unit.

Draw Down Years: 2007 – unit was pumped down with portable pump and completed by end of May for construction on west dike. Unit was reflooded in November with the pumps located at Toledo Pumping station.



Unit Goal:

Objectives:

Strategies: Maintain full pool and treat invasives. Aerial spray phrag in P2 and Potters pond if needed.

Management Strategy Constraints:

Repairs Needed:

II. Check new flap gate to ensure proper function.

Unit: Cedar Point Pool 2

Keep water as high as possible, without flooding neighbor's woods (max is 2.70)

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
	9	Jan. 30	3.37	
	10	Mar. 8	2.7	
	12	22	2.53	Pumping Out
	14	Apr. 4	1.9 ?	Very dirty
	15	12	1.85 ?	"
	16	16	1.94	50 3/4"
2.7	17	27	1.85	
	19	May 10	2.76	Gauge Needs cleaned
	20	16	2.85	
	22	29	1.58	
	24	June 13	1.38	
	25	18	1.41	
	26	25	1.38	
	28	July 11	1.20	
	29	17	1.10	
	30	23	1.02	
		27	1.00	7/31 - 0.97
	32	Aug. 7	1.00	
	33	13	1.06	
	34	23	1.30	
	35	30	1.40	
	36	Sept. 4	2.37	
	37	13	2.4	
	40	Oct. 4	1.37	
	42	14	1.36	
	43	23	1.30	50 WADA
	44	30	1.40	
		Dec 7	1.47	5 77.45 = 6.16
			1.5	

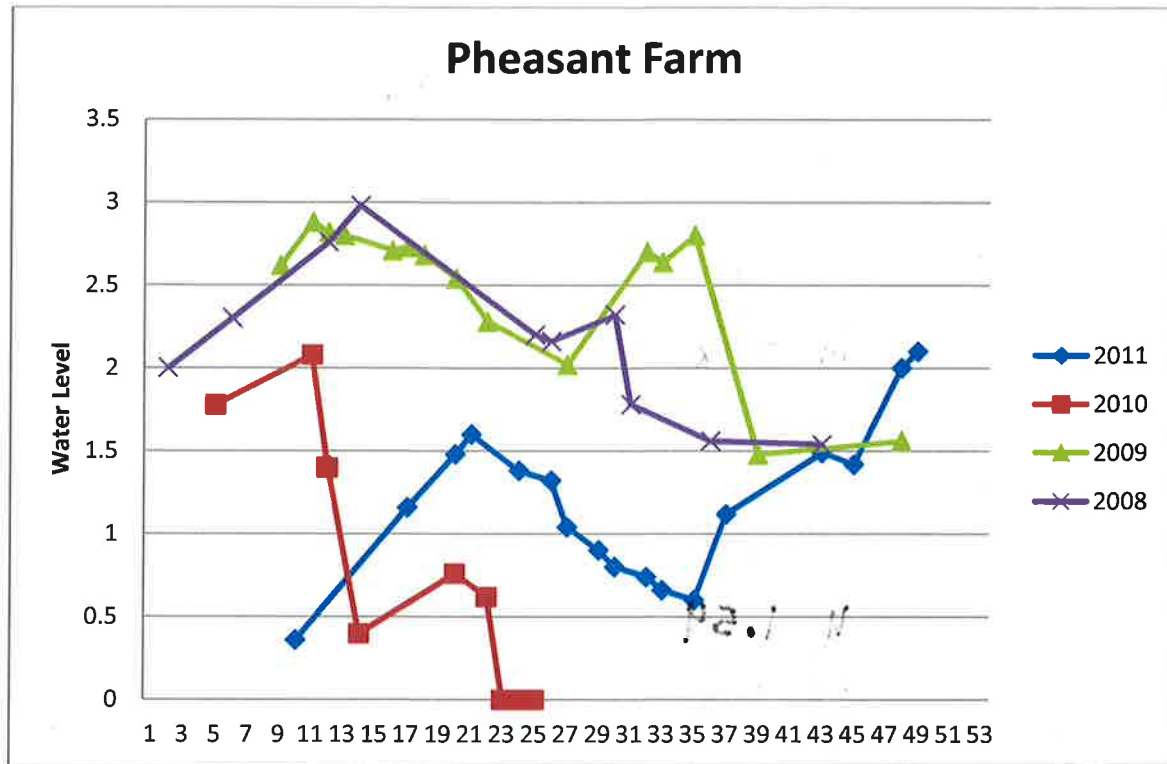
Jan 9 1.49

Unit: Cedar Point Pheasant Farm

Acres: 155

2011 Activity: Set WCS to flow in after construction of east dike was complete. No active management. Opened unit to county ditch for drainage in March. Then set up a portable pump to pump out unit for construction. Which began in June. Dikes rebuilt in 2010.

Draw Down Years: 2005- low water & Evapotranspiration led to a late summer/fall draw down.



Unit Goal:

Objectives:

Strategies: Monitor and treat invasives, especially phrag. Maintain high water levels.

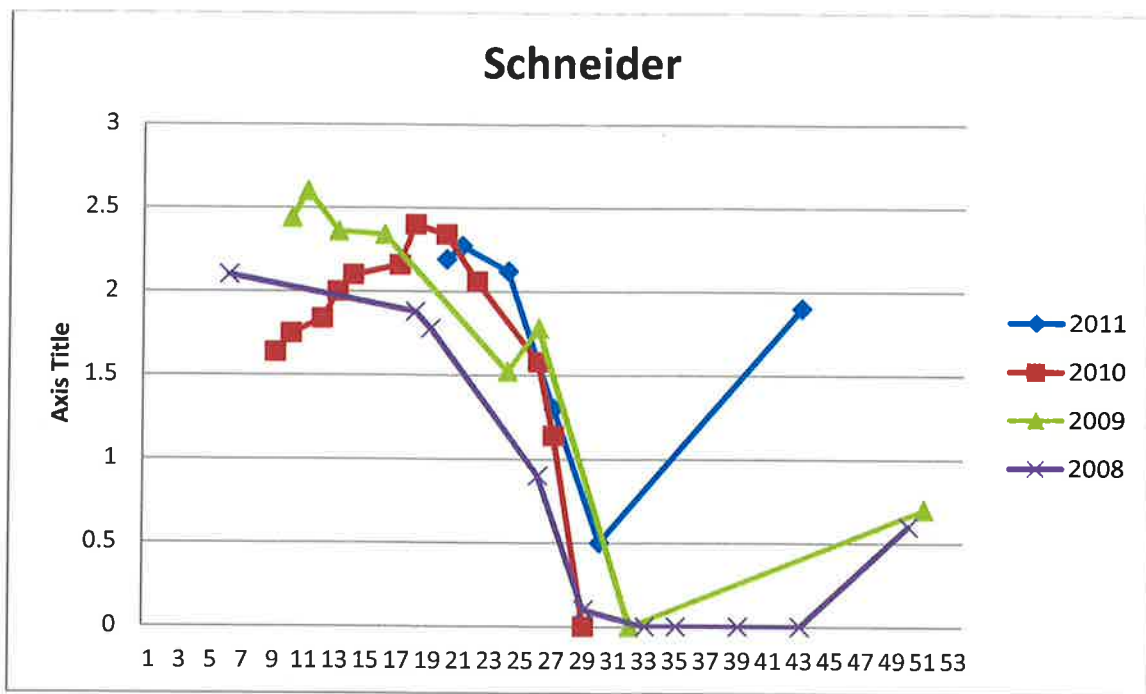
Management Strategy Constraints: Gate to county drainage ditch leaks.

Repairs:

Unit: Cedar Point Pheasant Farm

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
	5	Jan. 30	2.40	
	10	Mar. 8	2.50	
	12	22	2.68	
	14	Apr. 4	2.68	
	15	12	2.55	
	16	16	2.51	
	17	27	2.4	
	20	May 15	2.36	
	22	29	2.18	
	24	June 13	1.96	
	25	17	1.99	
	26	25	1.90	
	28	July 11	1.54	
	29	17	1.42	
	30	27	1.16	
	31	31	1.10	
	32	Aug. 7	0.94	
	33	13	0.78	
	34	23	0.82	
	35	30	0.78	
	36	Sept. 4	0.90	
	37	13	0.80	17 0.68
	40	Oct. 3	0.60	1660
	42	14	0.58	10/25 New Gauge 0.48 = 571.78
	44	30	0.46	71.74 (New)
		DEC 7	0.36	
		13	0.36	

Jan 9 71.78 0.50



Unit: Schneider

2011 Activity: This unit has fluctuated with rain this year. Needs mowed again, lots of phrag and cattail.

Draw down years: 2008- Unit was dewatered by mid June for construction on neighbor to west wetland project. In addition, areas of invasives were mowed & disked in August.

Week #	Desired water level	2011 Date	Actual Water level Staff reading	Notes
11		1/23	2.50	
12		3/20	2.50	
18		5/4	1.78	
20		5/16	1.62	
21		5/24	1.35	
22		5/29	1.29	
24		6/11	0.68	
25		6/18	0.40	
26		6/25	0.06	- almost dry @ gauge
27		7/2	dry	
28		7/27	dry	
29		8/14	dry	
				dry

Notes: Pulling boards to remove water should be done carefully to ensure not to overfill drainage ditch and flood neighbor to the east.

Strategies: Disk or till whenever weather allows.

Unit: Blausey North East unit

2011 Activity: Pump was periodically turned on after rain events to keep flooding down.

Restoration project will be done next year.

Draw Down Years: Construction was completed in 2008.

[illegible]

Security Supervisor: 419-321-7557

Notes: Pool 1 also has pumping capabilities. There are double flaps between P2 & P3. Water cannot be pumped into pool 2. P3 has double flap gates into the Lake and has a pump that pumps out. P3 has a little watershed from the runoff on the west end. The lock combo is 7556.

2007 Levels:

	May 22	November 6	
Pool 1	0.78	?	-(veg looks good)
Pool 2	2.45	1.62	-(lots of ducks-2000-2500, good veg)
Pool 3	0.75	0.18	-3000 – 3500 ducks. Beaver action

on south side. Muskrats thick in NE corner and SW side, but not too bad. Veg recovering.

2008 Levels:

Nov 4

Pool 1

Pool 2	0
Pool 3	0.10

2009 Levels:

April 22

Nov. 9

Pool 1	0.92	1.22	-spring notes: >500 ducks (ruddy, scaup, Gadwall)
--------	------	------	---

Pool 2	2.5" over blue pipe to P3	low
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Pool 3 0.40 (pump on) 9.58 - spring notes: >800 ducks

[illegible]

Other Satellite Properties

Diefenthaler:

2009 Activity: Evapotranspiration led to a draw down in June, except for main channel. Draw Down Years: 2009 & 2008 – Evapotranspiration led to draw down in August except for main channel. It was flooded again in November from rains; 2007 - July, the unit was mistakenly drawndown. No activity on 2010
2011- Maintain full pull, floats set to come on to prevent flooding into barn.

Kontz:

2009 Activity: Unit is currently open to lake levels. The wetland remained flooded throughout entire season (Spring-Fall). Hairy willow herb was treated on the upland just south of SR 2 and before the woods. Very little hairy willow herb was found along the wetland transitional areas.
No activity in 2010
2011- Unit open to turtle creek via failed structure under SR2- no active management.

Helle:

2009 Activity: No active management.
March & April 2009: water was across all of unit and base of hill on SE side property owner. Water was in woods all the way to road.
2011- Take off high water in Nov-Dec. Entire unit flooded to road, and water backed up with farm field.

3/28 - opened all the way to River 8:45

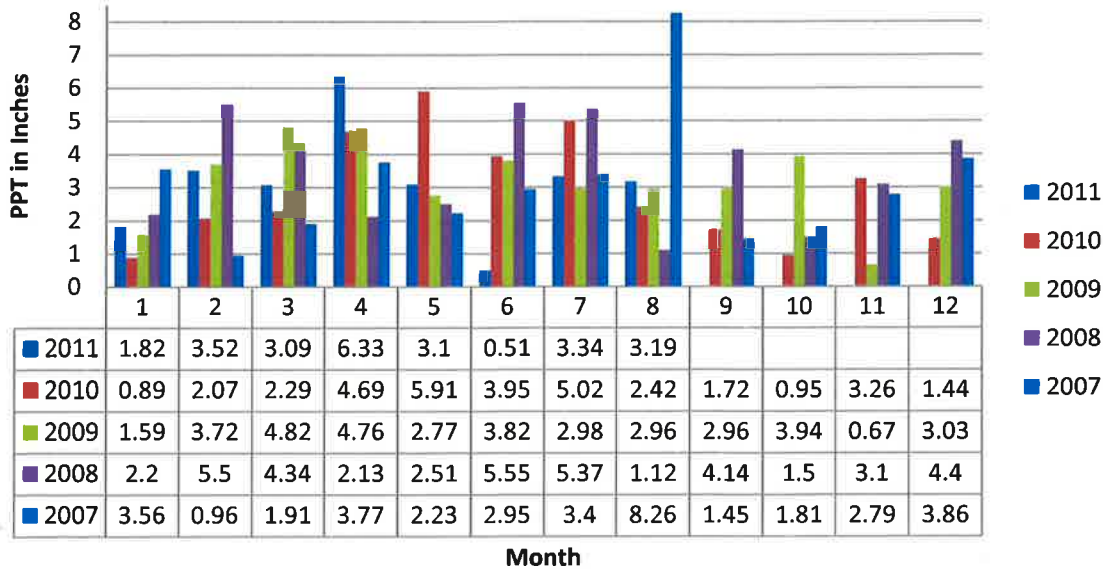
Gaeth-Kurdy:

2009 Activity: Eric maintained subpump in ditch behind his house. This pump is very costly and should be replaced with regular pump.
2011- In general, pump when necessary to prevent flooding.

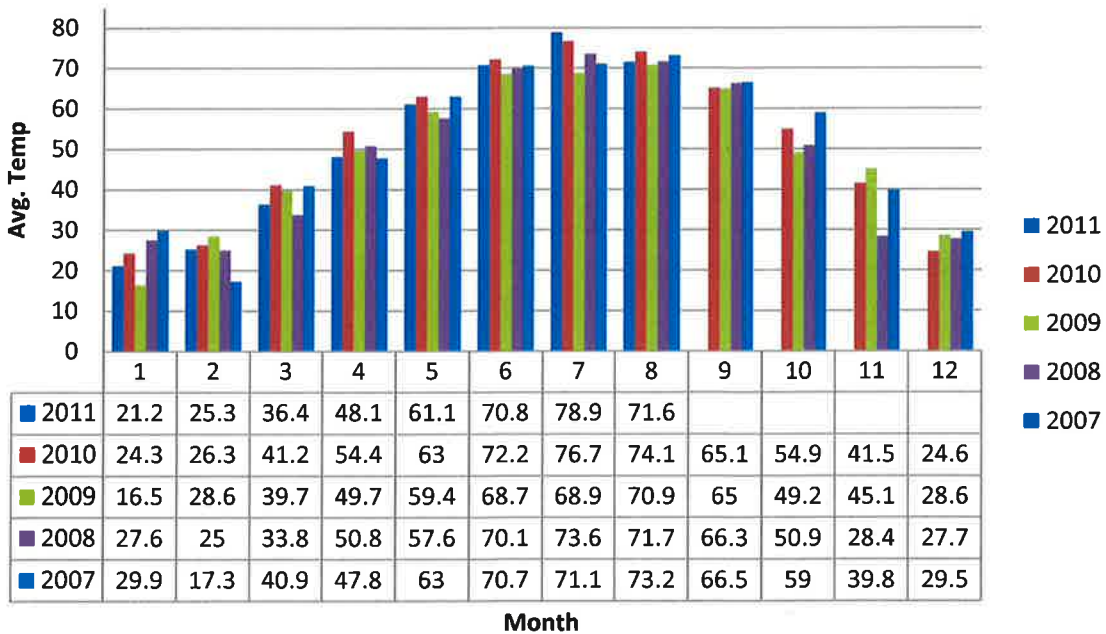
Boss:

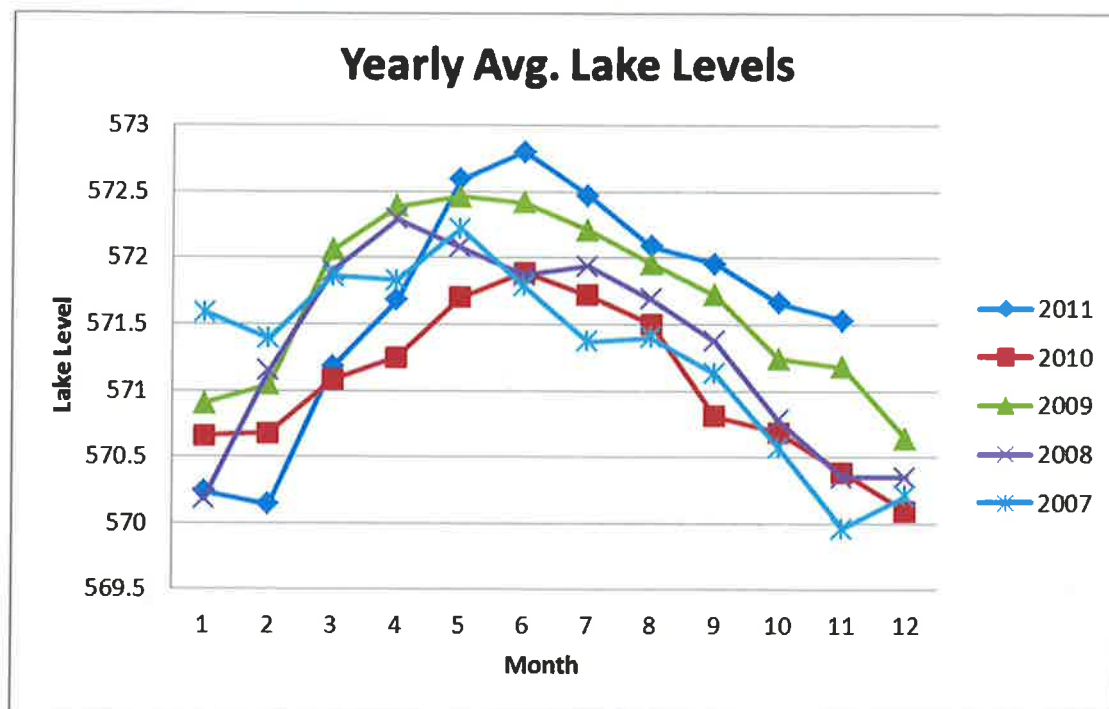
2009 Activity: A stop log structure was installed on the drainage ditch, and the driveway culvert was replaced because it had collapsed.
2010- Field not flooded
2011- Field flooded in May for shorebirds, boards removed late May, only partially down because road ditch is so high boards added in Dec. to hold water.

Monthly PPT



Monthly Avg. Temp





Unit	YR DD	Dates	Notes
Goose Pen	2010	4/14-12/9	
	2009	7/17-12/7	
	2006	3/20-Oct.	
Woodies Roost East	2011	7/7-10/3	Construction
	2009	4/22-8/26	
	2006	April-Aug.	
Woodies Roost West	2011	7/7-11/7	Construction
	2009	4/22-8/26	
	2006	April-Aug.	
Show Pool	2009	9/17-12/7	
Pool 1			
Entrance Pool	2010	4/14-10/9	
MSU 8B			
Pool 2C			
Pool 2B	2010		
	2006	March-June	
Pool 2A	2009?		
	2007	March-July	
MSU 8A	2010	8/1-11/9	
MSU LL	2010	Sept-Dec	
	2009	Sept-Dec	
Mini Marsh			
HU 93	2011	7/1-9/5	
	2009	7/17-9/22	
MSU 7			
MSU 6	2008	6/16-9/9	
	2006	July-Sept	
HU 6	2011	July-Sept	Construction
	2010	4/28-10/8	Construction
	2009	Aug-Oct	
MS 2 North			
MS 2 South			
MSU 3	2009	7/17-10/21	
MSU 5	2011	8/8-12/2	Good Shorebird Use
	2008	Sept-Dec	
MSU 4	2008	5/13-9/6	
	2007	6/7-10/9	
Pool 3	2010	9/8-12/?	
Metzger Marsh	2007	3/22-6/7	
Pool 9 East			
Pool 9 Borrow	2010	5/12-10/1	
Darby P1			
Darby P2			
Darby P3			
Darby P4	2010	5/3-12/?	
CP Pool 1	2010	Aug-Past Dec.	
CP Pool 2	2007	Apri-Nov.	
CP Pheasant Farm	2010	6/1-Past Dec.	

Water Management Notes 2012

Water level management in 2012 will likely continue to present severe logistical challenges for the Refuge. Conditions as of February 2012 have most units at or above full pool levels. Soils throughout the region are fully saturated, and even rainfall of 0.5-1 inch has been enough in the last few months to send some rivers into flood stage. High lake levels may result in increased pumping needs, especially to provide spring shorebird habitat.

An extremely mild winter has resulted in wetland units being only partially frozen to a depth of a few inches. Open water areas have persisted in many areas throughout the winter, leading to above average numbers of waterfowl overwintering. Tundra swans well in excess of 4000 have overwintered at the refuge, and with many more occurring in the local area.

2011 Context

Precipitation for 2011 set an all-time record during 2011 in Toledo. The Lake Erie basin for the 12 month period ending January 2012 received 52.66 inches of precipitation. This is 149% (17.26 inches) above the long term annual average of 35.40 inches. As a result, average Lake Erie water levels have experienced some unusual changes. The typically annual cycle for Lake Erie includes normal seasonal lows overwinter from November through February, with a gradual rise of about 13 inches from February until June, then begin gradual decline from June until November.

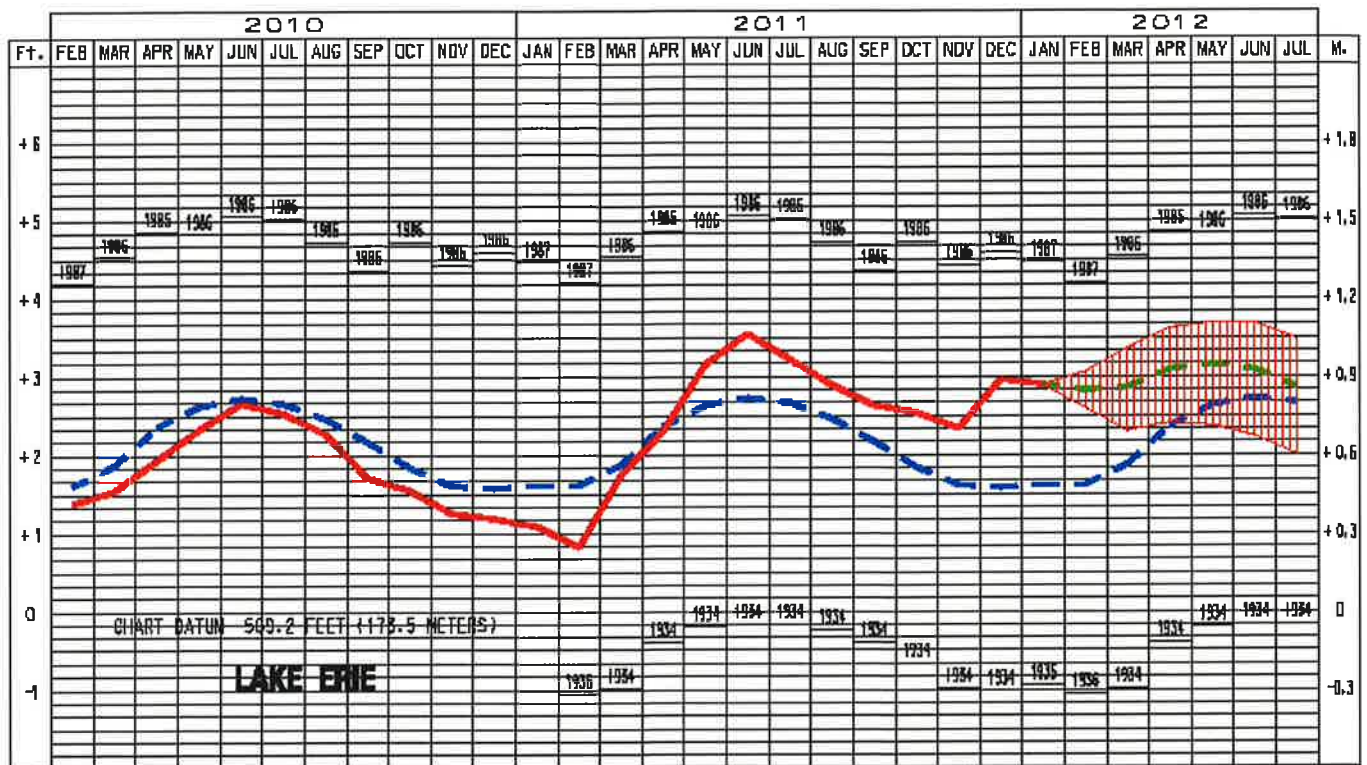
For 2011, Lake Erie declined until February, with water levels at 570.14 (IGLD 1985), about 0.7 feet below long term average. With high precipitation throughout the spring and summer, Lake Erie rose to 572.47 in June, an increase of 2.33 feet in just 4 months (record rate of increase?).

Such conditions presented extreme challenges to the refuge in managing water levels during 2011. Annual planning for the current year is normally done in February, and relies on US ACE water level forecasts of Lake Erie to make determinations of water availability for pumping in late summer and fall. In February 2011, Lake Erie was below average and forecasted by the US ACE to decline further. In this context, refuge staff were very concerned about water being available to feed pumps by the time we needed water in the fall. Thus, refuge impoundment levels were not lowered as much as would typically occur in the spring in taking off overwinter high water levels. The rapid rise in Lake Erie over the spring, with excessive rainfall over the period, resulted in refuge staff having to continually adjust water levels throughout the year. The increase in Lake Erie to above average water levels also resulted in increased pumping costs to prevent units from becoming too high, because some units could no longer free flow out to the lake. Water level management problems were particularly acute in trying to dewater units for shorebird migration in spring and fall. In addition, near continual precipitation and lack of drying times prevented planned prescribed burns at Ottawa Pool 3 and Crane Creek units.

2012 Forecast

Currently, US ACE is forecasting much less of a spring increase in Lake Erie. This may be due to the lack of any real winter, with no accumulation of ice or snow pack for typical spring run off. They are also forecasting a month earlier peak water level. However, the current prediction is still for Lake Erie to remain above long term average for the forecast period. In this situation, we should have enough water at the pump stations in the fall when we need to add water. US ACE model inputs are unknown, and it is possible that they do not take into account already saturated soil conditions, which will increase runoff; so Lake Level estimates could be on the low side.

LAKE ERIE WATER LEVELS - FEBRUARY 2012



LEGEND

LAKE LEVELS

RECORDED

PROJECTED



AVERAGE =

MINIMUM =

MAXIMUM =



1918-2010 Average, Maximum and Minimum for period 1918-2010

Things needing repaired throughout the year:

NOTES:

Ottawa National Wildlife Refuge Moist Soil Management 2012 Planned Activities

Unit	Size (Ac)	Initiate Draw-down	Complete Draw-down	Top Concrete	Full Pool Elevation	Dry Elevation	2008 Proposed Management
Goose Pen	57				1.8-2.0		<ul style="list-style-type: none"> • Cottonwood • Maintain max pool • Possible spray • Evaluate for connection to show pool • Rebuild east dike.
Woodies Roost East					3.0-3.3		<ul style="list-style-type: none"> • Maintain Full pool – 2 hunt blinds. • Assess FR • Long-term WCS/pipe at Route 2
Woodies Roost West					>2.5		<ul style="list-style-type: none"> • Maintain full pool- determine full pool. • Allow muskrat to open up • Replace WCS/pipe 2012 • Move blind/add 2nd. • IGLD benchmark and staff gauge.
Show Pool	41				5.5		<ul style="list-style-type: none"> • Maintain Full Pool • 2012 DD/Construction • Bathymetry • Evaluate for connection to Goose Pen
Pool 1	343				2.8		<ul style="list-style-type: none"> • Let it do what it wants • COTE
Entrance Pool	150				75.74		<ul style="list-style-type: none"> • Max pool • Check elevation • Pump to maintain - Bathymetry

Early season draw-down date is prior to 1 May; however early can be anytime during the first 45 days after the average last frost date (April 15th – end May).

Mid-season draw-down date 1 May – 15 June.

Late season draw-down date after 15 June or anytime during the last 90 days before average first frost date (June – Oct).

Ottawa National Wildlife Refuge Moist Soil Management 2012 Planned Activities

Unit	Size (Ac)	Initiate Draw-down	Complete Draw-down	Top Concrete	Full Pool Elevation	Dry Elevation	2008 Proposed Management
MS8b	100	March 19	May 10				<ul style="list-style-type: none"> • Spring DD – partial • Target peak shorebird/MBD. • March-April – teal depth • Shorebird may. • Maintain as open to Lake open after carp run.
Pool 2c	82						<ul style="list-style-type: none"> • Open to Lake • Set carp gates during spawning.
Pool 2b	95						<ul style="list-style-type: none"> • Install new stop log structure between 2a and 2b.
Pool 2a	65	April					<ul style="list-style-type: none"> • Keep high water • Potential fall shorebird.
MS 8a	56						<ul style="list-style-type: none"> • Pump out – start lower – earlier evapotranspiration • Tree recruitment – <i>WCB</i>
MS LL	27	April 1			1.0		<ul style="list-style-type: none"> - Flap gate on pump outlet - DD, Mow, possibly disk - Knockdown trees - Monitor and adapt
Mini Marsh	30	July 4	August 4 Adaptable		Disturbance in high ground		

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Ottawa National Wildlife Refuge Moist Soil Management 2012 Planned Activities

Unit	Size (Ac)	Initiate Draw-down	Complete Draw-down	Top Concrete	Full Pool Elevation	Dry Elevation	2008 Proposed Management
HU 93		Mid-March Play by ear					<ul style="list-style-type: none"> • Let DD naturally • Mow, disk in fall. Burn if possible • Let fill
MS 7	94	Top off March 19 th April 15- shorebirds	May				<ul style="list-style-type: none"> • Spring DD • Options mow, summer spray • Drill/broadcast seed jap millet • Teal shorebird
MS 6 Hub	70						<ul style="list-style-type: none"> • Manage as moist soil • Heavy disk in summer – cattail areas- leave millet area alone • Disk 2x may need to mow cottonwood • Fix hole MS6 and HU6
HU 6 MS 6		Late May	Mid-Summer				<ul style="list-style-type: none"> • Keep high water until fix hole • Maintain by pumping as needed • Fix hole immediately and stone fence straight down as an option instead of stone.
MS2 North							<ul style="list-style-type: none"> • DD as needed for construction. Strip disk E-W • Try to time differently with MS2S • Fix rat holes.
MS2 South							<ul style="list-style-type: none"> • DD as needed for construction • Strip disk N-S • Fix rat holes • Possible fall shorebird
MS 3	225						<ul style="list-style-type: none"> • Leave alone

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Mid-season draw-down date 1 May – 15 June.

Late season draw-down date after 15 June or anytime during the last 90 days before average first frost date (June – Oct).

Ottawa National Wildlife Refuge Moist Soil Management 2012 Planned Activities

Unit	Size (Ac)	Initiate Draw-down	Complete Draw-down	Top Concrete	Full Pool Elevation	Dry Elevation	2008 Proposed Management
MS 5	256						<ul style="list-style-type: none"> • Leave Alone – Do bathymetry
MS 4	112	March 19					<ul style="list-style-type: none"> • DD to fix structure
Pool 3							<ul style="list-style-type: none"> • Leave alone for now • Evaluate for fall burn • Possibly MM mow
Pool 9 East	77						<ul style="list-style-type: none"> • Leave alone-RCG contain treatment/ FR/Phrag • Possible fall shorebird
Pool 9 Borrow	38						<ul style="list-style-type: none"> • Modify pump structure – Y valve • Natural hydroperiod • 2013 DD
Darby P1	200						<ul style="list-style-type: none"> • Natural Hydroperiod
Darby P4	170	May 31	Late July				-3/8 1.4 DD
Darby P3	25						<ul style="list-style-type: none"> • Keep full pool. • Possibly fall shorebird
Darby P2	25						<ul style="list-style-type: none"> • Keep Full • Spray PL • Fall shorebird- possibly

Early season draw-down date is prior to 1 May; however early can be anytime during the first 45 days after the average last frost date (April 15th – end May).

Mid-season draw-down date 1 May – 15 June.

Late season draw-down date after 15 June or anytime during the last 90 days before average first frost date (June – Oct).

Ottawa National Wildlife Refuge Moist Soil Management 2012 Planned Activities

CP Pool 1	1460	March (all year)					<ul style="list-style-type: none"> • Blow out structure- pull high water off. • Catch seiche events
CP Pool 2	135	March					<ul style="list-style-type: none"> • Take high water off • Spray then burn • Schedule meeting with W/P
Pheasant Farm	155						<ul style="list-style-type: none"> • Keep max water • Keep eye on invasives
Schneider						End of July at latest	<ul style="list-style-type: none"> • Once dry mow/disk • May need to pull board • May need to pump out with portable pump
Blausey E							<ul style="list-style-type: none"> • As construction warrants
Blausey W							<ul style="list-style-type: none"> • Capture water up to pump for spring shorebirds
Helle							<ul style="list-style-type: none"> • Make sure doesn't flood. • As construction warrants
Kontz							<ul style="list-style-type: none"> • No management possible until construction done.

Early season draw-down date is prior to 1 May; however early can be anytime during the first 45 days after the average last frost date (April 15th - end May).

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